

Vyavahara Ayurveda



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Text Book on
VYAVAHARA AYURVEDA

Dr. Ashwinkumar S. Bharati

Text Book on

Vyavahara Ayurveda

(As per CCIM Syllabus)



Dr. Ashwinkumar S. Bharati
M.D. [Ayu]

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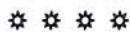
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Ayurveda**

6. Medico legal discussion of Insanity.
7. The Responsibilities, Conduct, Rules, Professional Rights and Confidentiality (Secrecy) of Physician.
8. The Attainment of Dharma, Artha, Kama and Moksha are the prime objective of Ayurveda.
9. Adharma is the soul cause of diseases therefore to follow Dharma is necessary.
10. Kayika (Physical), Vacika (Oral) and Manasika (Mental) types of Papa (Sins).



Contents

Subject	Page #.
I. Definition of Vyavahara Ayurveda (Jurisprudence) etc.	
1. Introduction	01
2. Definition of Forensic medicine	05
3. Medical jurisprudence	06
4. Forensic pathology	06
5. Medical ethics	06
6. Medical etiquette	06
7. Forensic nursing	07
8. Courts of India	08
9. Types of court	08
10. Inquest	10
11. Types of inquest	11
12. Summons	13
13. Conduct money	14
14. Medical evidence	14
15. Dying declaration	15
16. Dying deposition	17
17. Witness	18
18. Types of witness	18
19. Court procedure	19
20. Duties and conduct of physician in Witness box	24
21. Declaration of Geneva	27
22. Professional secrecy	28
23. Privilege communication	29

24. Professional negligence	29
25. Medical certificate	30
II. Discussion of Age, Determination of Age and Identification	
1. Definition	32
2. Identification data	33
3. Determination of sex from physical and morphological features	34
4. Ossification of bones	38
5. Height and Weight	39
6. Medico legal importance of age	40
7. Certificate of estimation of age	41
8. Anthropometry	42
9. Dactylography	43
10. Foot prints	44
11. Occupational marks	44
12. Scars, Examination, ML importance	45
13. Tattoo marks	46
14. Medico legal importance	46
15. Hairs	46
16. Medico legal importance	51
17. Forensic Odontology	52
18. Medico legal importance	52
19. Hand writing	52
20. Speech and voice	52
21. Gait	53
22. Blood examination	53
23. Medico Legal Importance	53
24. Deformities	54

25. Postmortem examination	54
26. Autopsy and second autopsy	56
III. Death and its Medico-Legal Importance	
1. Thanatology and types of death	57
2. Signs of Death	58
3. Anoxia and Types	59
4. Modes of Death	60
5. Coma	61
6. Syncope	62
7. Asphyxia	63
8. Postmortem examination	65
9. Sudden death	66
10. Negative autopsy	68
11. Signs and changes of death	69
12. Immediate (Somatic death)	70
13. Algor Mortis (Cooling of the body)	73
14. Postmortem Lividity	75
15. Difference between Postmortem Lividity and Bruise.	77
16. Changes in the Muscles	78
17. Primary Flaccidity	78
18. Rigor Mortis	78
19. Difference between Rigor mortis and Cadaveric spasm	80
20. Cadaveric Spasm	81
21. Late signs of Death	82
22. Putrification	82
23. Evolution of foul smelling gases	83

24. Appearance of Maggots	84
25. Putrefaction in Water	85
26. Adipocere or Saponification	86
27. Time for Adipocere	86
28. Medico legal importance of Adipocere	87
29. Mummification	87
30. Time of Mummification	88
31. Embalming	88
32. Necessity for Embalming	89
33. Time of Death	89
IV. Injury, Types of injury and Examination from Medico-Legal View, Electrocution etc...	
1. Definition of injury	93
2. Mechanical injury	94
3. Abrasions	94
4. Types of abrasions	94
5. Medico legal importance	97
6. Contusion or bruise	98
7. Classification of bruise	100
8. Medico legal importance	101
9. Difference between artificial and true Bruise	101
10. Laceration	103
11. Types of laceration	103
12. Split laceration	103
13. Stretch laceration	103
14. Shear laceration	104

15. Tears	104
16. Cut laceration	104
17. Incised wounds	105
18. Chop wounds	106
19. Stab or punctured wounds	107
20. Characteristic of stab wounds	107
21. Defense wounds	109
22. Self inflicted wounds	109
23. Therapeutic wounds	110
24. Fire-arm wounds (Forensic Ballistics)	110
25. Types of ballistics	112
26. Types of firearms	112
27. Rifled fire arms	113
28. Smooth bored firearm	114
29. Ammunition	114
30. Cartridge	115
31. Difference between Entry and Exit Wound	116
32. Difference between Suicidal, Accidental and Homicidal firearm wound	119
33. Thermal injuries	120
34. Trench foot	120
35. Frost Bite	120
36. Burns	121
37. Degrees of Burns	122
38. Modern classification of Burns	122
39. Rule of Nine	123
40. Causes of Death in Burns	124

41. Pugilistic Attitude	125
42. Difference between anti mortem and Postmortem burns	126
43. Suicidal Burning	126
44. Homicidal Burning	126
45. Postmortem Appearances	127
46. Scalds	128
47. Electrocution	128
48. Circumstances of Electrocution	129
49. Accidental Electrocution	129
50. Suicidal Electrocution	130
51. Homicidal Electrocution	130
52. Iatrogenic Electrocution	131
53. Judicial Electrocution	131
54. Lightning	131
55. Postmortem Appearances	132
56. Medico legal Importance	132
57. Starvation	133
58. Types of Starvation	133
59. Acute Starvation	133
60. Chronic Starvation	134
61. Postmortem Appearance	135
62. Asphyxial Death	136
63. Hanging	137
64. Types of Hanging	137
65. Complete Hanging	138
66. Partial Hanging	138
67. Causes of Death in Hanging	139
68. Homicidal Hanging	140

69. Lynching	140
70. Judicial Hanging	141
71. Accidental Hanging	142
72. Sexual Asphyxia	143
73. Difference between Suicidal and Homicidal Hanging	143
74. Strangulation	144
75. Cause of Death	145
76. Signs and Symptoms	145
77. Homicidal Strangulation	145
78. Types of Homicidal Strangulation	145
79. Strangulation by Ligature	146
80. Throttling (Manual Strangulation)	146
81. Bansdola	147
82. Garroting	147
83. Mugging	148
84. Management of Strangulation	148
85. Post mortem appearance	148
86. Difference between Hanging and Strangulation	150
87. Suffocation	151
88. Smothering	151
89. Suicide by Smothering	151
90. Accidental Smothering	152
91. Homicidal Smothering	152
92. Postmortem Appearance	152
93. Gagging	153
94. Choking	153
95. Café coronary	154

96. Traumatic Asphyxia	154
97. Postmortem Appearances	155
98. Drowning	155
99. Types of Drowning	156
100. Dry Drowning	156
101. Wet Drowning	156
102. Secondary Drowning	157
103. Immersion Syndrome	157
104. Mode of Death	157
105. Mechanism of Drowning	158
106. Post mortem examination	159
107. Medico legal importance	161
V. Knowledge of the Medico-Legal aspects of Adultery, Unnatural acts, Abortions, Foeticide, Impotence, Infertility, Virginity etc...	
1. Adultery	164
2. Impotence	164
3. Sterility	164
4. Fertility	164
5. Frigidity	165
6. Causes of Impotence and Sterility in Males	165
7. Causes of Impotence and Sterility in Females	165
8. Sterilization	167
9. Artificial Insemination	169
10. Artificial Insemination Homologus [AIH]	169

11. Artificial Insemination Donor [AIHD]	170
12. Artificial Insemination Homologus Donor [AIHD]	170
13. Legal problems of Artificial Insemination	170
14. Virginity	171
15. Signs of Virginity	171
16. Shapes of Hyomen	172
17. Causes of Rupture of Hyomen other than Sexual Intercourse	175
18. Diff.between Virginity and Defloration	176
19. Pregnancy	177
20. Signs and Symptoms of Pregnancy in A Living Women	178
21. Subjective Signs	178
22. Objective signs	178
23. Legitimacy	179
24. Delivery	180
25. Sexual Offences	181
26. Natural sexual offences	181
27. Unnatural sexual offences	181
28. Sexual perversions	181
29. Rape	182
30. Examination of victim	187
31. Incest	193
32. Sodomy	194
33. Anal examination	195
34. Buccal coitus	195
35. Tribadism	196

36. Bestiality	196
37. Sadism	197
38. Masochism	198
39. Necrophilia	198
40. Necrophagia	198
41. Masturbation	199
42. Voyeurism / Peeping Tom	199
43. Exhibitionism	199
44. Fetishism	200
45. Transvestism	200
46. Frotteurism	200
47. Fellatio	200
48. Cunnilingus	200
49. Troilism	201
50. Undinism	201
51. Indecent Assault	201
52. Sexual Harassment	201
53. Abortion	202
54. Natural Abortion	202
55. Spontaneous Abortion	203
56. Medical Termination of Pregnancy	203
57. Criminal Abortion	205
58. Difference between Natural and Criminal Abortion	206
59. Fabricated Abortion	206
60. Infanticide	208
61. Battered Baby Syndrome	209
62. Signs of Live Birth	211
63. Abandoning of Infants	211

64. Sudden Infant Death Syndrome	211
VI. Medico legal discussion of Insanity	
1. Definition of Insanity	213
2. Synonyms of Insanity	213
3. Delusion	213
4. Varieties of Delusion	213
5. Illusion	215
6. Delirium	215
7. Causes of Insanity	216
8. Classification of Insanity	216
9. Hallucinations	217
10. Obsession	217
11. Feigned Insanity	219
12. Depression	219
13. Endogenous Depression	220
14. Reactive Depression	220
15. Involutional Depression	221
16. Somnambulism	221
17. Hypnotism	221
18. Responsibilities of an Insane	221
19. Civil responsibility	222
20. Criminal responsibility	223
VII. The Responsibilities, Conduct, Rules, Professional rites and Confidentiality (Secrecy) of Physician	
1. Duties of a Physician	224
2. Rights of a registered medical Practitioner	224
3. Physicians responsibilities in criminal	225

Matter	225
4. Privileged Communication	226
5. Duties of a Patient	227
6. Professional Confidentiality (Secrecy)	228
7. Euthanasia (Mercy Killing)	228
8. Active Euthanasia	228
9. Passive Euthanasia	
VIII. Attainment of dharma, artha, kama And moksha is prime objective of Ayurveda.	
1. Dharma	229
2. Artha	229
3. Kama	229
4. Moksha	229
5. Arogya	230
IX. Adhrama is sole cause of diseases Therefore to follow dharma is Necessary.	
1. Route cause for vatadi doshas is Adhrama	231
2. Death in war is due to Adharma	231
3. The attacks of devils is due to adharma	232
4. Curse (Shapa) is also due to adharma	232
X. Kayika (physical), Vacika (oral) and Manasika (mental) types of papa (sins)	
1. Kayika (Physical) Papa	233
2. Vacika (Oral) Papa	233
3. Manasika (Mental) Papa	233

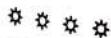
Charka's Ethics	235
Indian Penal Code (I.P.C.) Sections	237
Bibliography	243

List of Figures / Photographs

1. Court Procedures.
2. Death that must be reported to the Coroner.
3. Death that must be reported to the Police Officer.
4. External Features useful for establishing Identity.
5. Photograph of Dactylography.
6. Photograph of Tattoo-Mark.
7. Figure of Post-Mortem Instruments.1.
8. Figure of Post-Mortem Instruments.2.
9. Photograph of Bruise.
10. Diagram showing general features of a Revolver.
11. Diagram showing general features of a Pistol.
12. Photograph of Entry and Exit Wounds.
13. Photograph of Degrees of Burns.
14. Figure of Estimation of the extent of surface burns.
15. Photograph of Scald.
16. Photograph of Starvation.
17. Figure of Mechanical Asphyxia
18. Figure of Types of Hymen.
19. Figure of Vagina.

List of Charts

1. Types of Court.
2. Powers of Magistrate.
3. Difference between Dying Declaration and Dying Deposition.
4. Difference between Hindu Male and Muslim Male
5. Difference between Hindu Female and Muslim Female
6. Determination of Sex from physical / Morphological Features.
7. Difference between Temporary and Permanent Teeth.
8. Difference between Human Hair and Animal Hair.
9. Difference between Post Mortem Lividity and Bruise.
10. Difference between Rigor Mortis and Cadaveric Spasm.
11. Difference between True and Artificial Bruise.
12. Difference between Ante mortem and Postmortem Bruise.
13. Difference between Suicidal and Homicidal Wounds.
14. Types of Firearms.
15. Difference between Entry and Exit Wounds.
16. Difference between Ante mortem and Postmortem Burns.
17. Difference between Homicidal and Suicidal Hanging.
18. Difference between Hanging and Strangulation.
19. Difference between Virginity and Defloration.
20. Difference between Natural and Criminal Abortion.
21. Difference between Unbreathed and Breathed.
22. Difference between Insanity and Head Injury.
23. Difference between True and Feigned Insanity.



Chapter No.1

Definition of Vyavahara Ayurveda [Jurisprudence].
Discussion regarding court of justice, police enquiry. Oath, Medical evidence of the Physician-Opinion and rules regarding medical certificate and written and oral dying declaration of the witness.

Introduction:

The Development of medicine can be considered as old as mankind. To the earliest medicine was known in the form of magic witchcraft and worship of various objects of nature. To protect one self the ancient men framed a set of regulations, which was the origin of medical jurisprudence.

Manu, 3102 BC, was the first traditional King and law giver in India his famous treatise, Manusmriti laid down the various laws prevailing in those days. It prescribed specific rules for marriages, punishment for various offences were mentioned viz, adultery, seduction, incest, unnatural sexual offence etc.

The first treatise of Ayurvedic science Charaka Samhita lays down an elaborate code for regarding the training, duties, privileges, and social status of Physicians. It can be considered as the origin of medical ethics. It gives

a detailed description of various poisons, signs, symptoms and treatment of poisoning.

Indus Valley Civilization [3250 B.C]:

Medicines like Shilajit and weapons made of Bronze and copper were widely used. Prevalent were three types of burial-complete, fractional and post cremation type. The King was the head and ruler of that kingdom.

Rigveda [3000-1000 B.C] is the oldest, certain laws were laid like marriages between sisters and brothers were prohibited, killing embryo child, murder, drunkenness, was prohibited. Marriages before puberty were not allowed. During the period of Atharva Veda, details about remedies in the form of charms to cure wounds, burns poisoning snakebite insanity were laid. The dissection of dead animals and human-body for the sake of knowledge was allowed. The treatise on Indian Medicine, Agnivesa Charaka Samhita during 7th Century B.C, in this elaborate code for training, duties, privileges and social status to Physicians was given. The Students selected for the course was based on fixed criteria The Instructions given were free.

4th and 3rd Century B.C ArthaShastra of Kautilya known as the Law code, penal laws were defined and medical practice was regulated. In this book, there is mention of examination of the dead bodies, viscera examination in case of poisoning, a piece of stomach or heart was burnt and on the type of flame and the sound produced indicated the type of poisoning.

Sushruta –“The Father of Indian Surgery”, in his Sushruta Samhita, 200-300 A.D section on Forensic Medicine was completely written and a section on Toxicology poisons from Plants, Animal Products, and Artificial Products were described in detail.

Past history is not only remembered but is recovered and invented, it is a link between the past and is a continuous process and has to be preserved for the benefit of the future. History of forensic medicine is a part of history in general and part of the story of the progress of man through ages.

Greece: Hippocrates [450-355 B.C] his contribution to the modern medicine is outstanding “Hippocrates Oath” is a part of medical law, doctors were compulsorily made to take this oath to serve the poor and practice without any profit.

Aristotle [384-322 B.C] fixed animation of the foetus at 40th day and advocated abortion for population control. Archimedes [287-212 B.C] was the first to lay the foundation of forensic science by detecting gold adulteration in the crown of Syracuse.

Rome: Numa Pompilous [600 B.C] examined women's dead body, for the first time. Later Lex Aquilla [572 B.C] described lethality of the wounds.

Lex Cornilla [138-78 B.C] said that five midwives should prove pregnancy.

Jerusalem: Code of laws in the medical practice was formed in 1100 A.D.

Sir Bernard Spilsbury [1877-1947] conducted 25,000 medico-legal autopsies gathered a fund of experience.

America: Legal medicine developed, later Coroner system was first introduced, and it was replaced by medical examination system

A significant development occurred between IV and III century B.C, the Kautilya Arthashastra was the code of this period. Penal laws were well defined, medical practice was regulated and medical knowledge was utilized for the purpose of law.

India was subjected to invasion by foreign powers, like the Turks, Mongols, Mohammedans etc. The Portuguese, Dutch, French and the British invaded the country. In 1822 the First Medical School was established in Calcutta and converted into Medical College in 1835 A.D. The first chair in Medical Jurisprudence was instituted in Calcutta Medical College in 1845 and Dr. Wood Ford was the first professor of medical jurisprudence in the country. There are two distinct aspects of law and medicine relationships, they are as follows,

- Forensic Medicine.
- Medical Jurisprudence.

Forensic Medicine

The word forensic medicine is derived from the Latin word "Forensis" which implies something pertaining to forum. In Rome "Forum" is a place where civic and legal matters used to be discussed by those with public responsibility. The legal authorities for the solution of legal problems use it. Thus the Forensic Medicine is the science, which deals with medical aspects of law.

Medical Jurisprudence:

Juris=Law Prudentia=Knowledge

It is the branch, which deals with legal responsibilities of the Physician with particular reference to those arising from Physician-patient relationship, such as medical negligence, cases, consent, rights and duties of Doctors, Professional misconduct, medical ethics etc...

Forensic Pathology:

It is the science which deals with the study of violence, unnatural diseased death, cause and manner of death in violence, suspicious cases etc.

Medical Ethics:

Ethics are moral principles to be followed among the members of medical profession with each other, with their patients and state.

Medical Etiquette:

Medical etiquette deals with conventional laws of courtesy observed between members of the medical profession.

Medical Jurisprudence is the older term for legal or forensic medicine in fact, medical jurisprudence, forensic medicine and legal medicines are considered as synonymous terms. Irrespect of the names the subject spreads into almost every branch of medicine and it

certainly not confined to criminal matters, it covers responsibilities of doctors towards the state patients and towards each other.

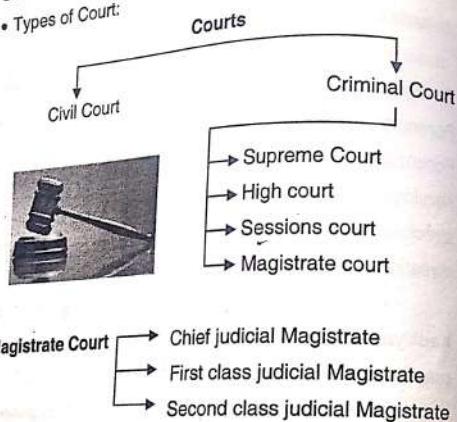
With the enormous advances in knowledge and Technology during the past decades, the fields like Forensic odontology, Forensic osteology, Forensic biology, Forensic ballistics, Forensic psychiatry and Forensic serology, etc have come to be recognized as specializations of autopsy findings in medico legal investigation of death.

Between IV and III century BC Arthashastra of Kautilya defined penal laws and regulated medical practice. Hippocrates (460 to 377 BC), the father of western medicine was born and practiced in the Island of Kos in Greece, discussed the lethality of wounds. The first book on forensic medicine was published in 1602 by Italian physician, Fortunato Fedele.

Forensic Nursing

It is a specialty dealing with a scientific role of registered nurses in the medico legal arena. It aims to provide a constructive response to the societal needs of the victims of domestic violence, sexual assault, drug-alcohol addiction psychological abuse, trauma and other death related problems.

Courts in India:
• Types of Court:



- Magistrate Court → Chief judicial Magistrate
 → First class judicial Magistrate
 → Second class judicial Magistrate

• Supreme Court:

It is the highest judicial tribunal of the country and is located in New Delhi. It has the power of supervision of all courts in India; the law declared by it is binding on all the courts.

• High Court:

The high court is usually located in the Capital of the State, and is the highest tribunal for the state; it can try any offence and pass any sentence authorized by law.

• Sessions Court:

It is established by the state government and is usually located at the district head quarters; it can only try the cases, which have been committed to it by Magistrate. The sentence of death passed by it must be confirmed by the High court.

• Magistrate Court:

There are usually 3 classes of Magistrate in every district,

1. Chief judicial Magistrate
2. First judicial Magistrate
3. Second class judicial Magistrate

In addition to the above, the special Magistrate and juvenile Magistrate may also be appointed depending upon the circumstances.

❖ Special Magistrate:

They could be either metropolitan judicial or executive magistrate and may be appointed for special purposes as, for example to try cases of noting. They are appointed by regular Magistrates, who cannot cope with the extra load of work or the enquiry has to be completed within a specified period.

❖ Powers of Magistrates:

Magistrate	Period of Imprisonment	Amount of Fine
Chief Judicial Metropolitan	Upto 7 years	Fine without limit but as per law
First-class Judicial	Upto 3 years	Fine up to Rs. 5000
Second-class Judicial	Upto 1 year	Fine up to Rs. 1000

❖ Juvenile Magistrate:

The juvenile court tries juvenile offenders, who are children below the age of 16 years. The offenders are tried in the juvenile court under the children act 1960 and if found guilty are usually not imprisoned are punished as adult offenders but are sent to reformatory school.

Inquest:

Inquest - in = in: quasitus = to seek, means legal or judicial enquiry or investigation into the cause of death. It is done to know the actual cause of death in suicide, murder, killing by an animal or machinery, accidents, or death due to torture, suspicious deaths.

Types of Inquest:

There are two types of inquests held in India, they are:

- 1) The Police Inquest
- 2) The Magistrate Inquest

Police Inquest:

The police officer in charge of a police station conducts the inquest. The police officer making the inquest is known as investigating officer, whenever the officer-in-charge of a police station receives information about any accident, suspicious death, suicide case, he should immediately give intimation to the executive magistrate empowered to hold inquests and proceed to the place.

Panchas:

Two or more respectable persons are considered as Panchas.

Panchanama:

The investigating officers with the help of witnesses present at the spot, prepares a report of the apparent cause of death, describing wounds, fractures, marks of injury found on the body and is signed by the witness and police officer. If no foul play is suspected, the dead body is

handed over to the relatives for disposal. In cases of suspicious the body is sent to post mortem examination to the nearest authorized government doctor.

The report is forwarded to the magistrate. The investigating police officer may summon persons who were at the spot and know the facts of the case.

Dishonor to the Summons:

If the Summons is refused or dis-honored, is punishable with imprisonment upto six months under section 179 IPC.

Magistrate Inquest:

Magistrate inquest means an enquiry conducted by a magistrate to ascertain matters of fact. It is commonly held in the following cases.

- a) Death of a convict in jail
- b) Death of a person in police custody
- c) Death of a person during interrogation
- d) Death as a result of police shooting
- e) Death in a psychiatric Hospital
- f) Exhumation cases
- g) Dowry deaths

Coroners Inquest:

The Inquest held by a coroner who is qualified and experienced and as such it is superior to police inquest, it is held in USA and in Mumbai. He need not inform the magistrate about the crime.

Jury:

Jury is a group of responsible educated persons of good social position known as jurors. It is composed of uneven number of persons.

Summons or Subponea:

Sub = Under Poena = Penalty

It is issued by the court in writing, in duplicate signed by the presiding officer of the court and bears the seal of the court to attend the court of law on a particular day, time and place.

The summons should be obeyed and the witness should produce the documents, which are necessary. If there is any serious or urgent valid reason for not attending the court may be excused. If the summons is served and the witness fails to attend the court, in civil cases, he will be liable to pay damages. In criminal cases, may sentence to find or the court may issue bailable or non-bailable warrant to secure the presence of the witness.

Note:

- 1) If the witness is summoned by two courts on the same day, one being criminal and the other civil, he should attend the criminal court and give justifiable reason for not attending the civil court.
- 2) If the summonses are received from two courts on the same day both being civil or criminal, he should attend the higher court.
- 3) If summons are received from two courts of same status, he must attend the court from where he received the summons first informing his inability to other court.

Conduct Money:

It is the fee offered or paid to a witness in civil cases, at the time of serving the summons to meet the expenses towards attending the court. In criminal cases as such no fees is paid to the witness at the time of serving summons he should attend the court and give evidence otherwise it will be contempt of court, the conveyance charges and daily allowance can be claimed or requested.

Medical Evidence:

All the relevant documents, statements, which the court permits, are required to be done by the witnesses in

relation to the matters of the fact is considered as medical evidence.

Types of Evidence:

There are two types of Evidence:

- 1) Oral Evidence
- 2) Documentary Evidence

Oral Evidence:

This may be direct or the evidence of eyewitness associated with the events. It may even be in the form of an opinion.

Documentary Evidence:

The documentary evidence constitutes of the following,

- 1) Medical certificate of ill health.
- 2) Medical certificate of insanity.
- 3) Medical certificate for death.
- 4) Medico-legal reports of injury.
- 5) Dying declaration – Dying Deposition.

Dying Declaration:

It is the statement, which is given by the patient, who is likely to die of some unlawful act, the diseased will be narrating the cause of condition or the circumstances leading to his death. If there is time, the attending physician should arrange a Magistrate to record the dying declaration of the person who is likely to die as a result of

criminal violence. If the patient's condition is critical, the medical officer can start recording the dying declaration, the physician should certify the patient is fit medically to give the dying declaration.

Certain points should be noted while recording the dying declaration.

1) The patient's relative should not be present

- 2) The patient should be explained that he is likely to die, so that he speaks the truth.
- 3) There is no oath taken because it is believed the dying person speaks only truth.
- 4) The dying declaration should be recorded in the patient's vernacular only.
- 5) The declaration when concluded should be read over to the victim and his signature, thumb impression to be taken and also should be signed by the physician and witnesses.
- 6) If the declaring dies while giving the declaration, it should be noted in the declaration, that the patient died and the time to be specified.
- 7) The Physician should sign and put his name in block letters, seal the document and should be sent immediately to the concerned Magistrate.

Dying Deposition:

A dying deposition is a statement on oath made by a dying person to a magistrate in the presence of the accused and his lawyer who has the opportunity of cross-examining the victim. Before the statement is made the doctor has to certify that the victim is in good condition.

- ❖ The dying deposition legally carries more weight than a dying declaration.
- ❖ It is made in front of Magistrate.
- ❖ It is recorded in the presence of accused; there is chance for cross-examining the declarant.

Dying Declaration	Dying Deposition
1) Statement is given to any One	1) Statement is given to Magistrate
2) Oath is not necessary	2) Oath is necessary
3) Accused is not present	3) Accused or his lawyer Present
4) Cross examination not done	4) Cross examination Permitted
5) It has less legal value	5) It has more legal value

Witness:

A witness is a person who gives sworn testimony (evidence) in the court of law as regards facts that can be drawn there from. There are 3 types of witness:

1. Common witness
2. Expert witness
3. Hostile witness

Common Witness:

A common witness is a person who gives the evidence over the facts observed or perceived by him. This can be considered 'First Hand Knowledge Rule', which may establish the exact circumstances on the case for the court.

Expert Witness:

An expert witness is a person who is skilled, trained professional, who by the experience enables to draw the inference from or express an opinion on observations made by him or others. The following are considered as expert witness.

- a) Handwriting expert
- b) Finger print expert
- c) Ballistic expert
- d) Chemical examiner

Hostile Witness:

It is one who is assumed to have an interest or motive for concealing part of the truth or for giving false evidence; an ordinary or expert witness may become hostile.

Perjury:

Perjury means giving willful false evidence after taking oath and diverting the court from the actual concept. The witness is liable for imprisonment, which may extend to seven years for perjury.

Order of Examination or Record of Evidence;

In the following manner the recording of the evidence takes place,

- 1) Oath
- 2) Examination- in - chief (Direct examination)
- 3) Cross examination
- 4) Re-Examination
- 5) Question by the Judge.

Oath:

Before giving the evidence the witness has to take oath in the witness box. He should take the oath as follows. "I do swear in the name of God, that what shall I state shall be the truth, the whole truth and nothing but the truth".

An Atheist [one who does not believe in God] should "Solemnly affirm" instead of swearing in the name of God.

Examination -in -Chief:

- This is the first examination of a witness by the party who calls him to give evidence in the court and this is done by the counsel who is appearing in the court on behalf of that party. If the private party summons the witness, he is first examined by the pleader of that party. In prosecution cases conducted by the Government the witness is first examined by the public prosecutor or police prosecutor. It is the duty of the witness to state all the facts within his knowledge.
- It should be noted that the questions put to the witness during examination- in -chief must relate to relevant facts. No leading question is ordinarily allowed during examination -in -chief.
- Leading questions may be allowed during examination- in -chief only in those cases in which the judge is satisfied that the witness is hostile and has been concealing the truth.

Cross-Examination:

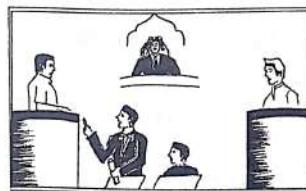
The lawyer for the opposite party or the accused then cross examines the witness with the object of drawing out of witness any fact or opinion, which may turn out to be favorable to his client, the counsel may put questions to test the correctness of the statements made by the witness during his examination-in-chief and may put leading questions, which are not allowed during examination in chief. The cross-examiner will make all possible things to weaken the evidence of the witness inaccurate. The witness should not lose his temper and yield to the pressure of the cross-examiner.

Re-Examination:

This is conducted by the counsel for the side, which has summoned the witness to the court with the object of securing explanation of any obscure point or clearing up of any discrepancy that may have arisen during cross examination. No new matter can be introduced by the witness during re-examination without the permission of the judge or the opposing counsel, the witness is liable to further cross examined by the opposing counsel on any new matter raised during re-examination.

Question by the Judge:

The Judge may ask any question in any form about facts relevant or irrelevant at any stage of the examination to clear up doubts. The court is empowered to recall and re-examine any witness who is already examined.



← Fig no. 1
Chief Examination
(Direct Examination)

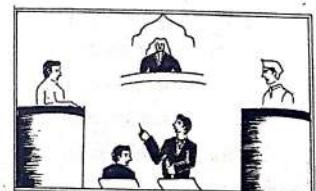
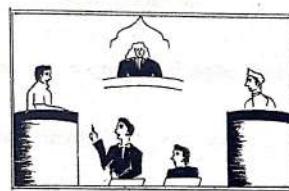


Fig no. 2 →
Cross Examination



← Fig no. 3
Re-Examination



Fig no. 4 →
Question by Judge

The Duties and Conduct of the Physician in the Witness Box:

The following rules help a doctor in the witness box.

- 1) Should be well prepared with the witness of the evidence before entering the Witness box.
- 2) Should carry all the relevant reports, record, photographs, X-rays, blood grouping, reports, etc.
- 3) Should not discuss the case with any other person who is not related.
- 4) Should not attempt to memorize.
- 5) Should stand up straight.
- 6) Should be well dressed and modest
- 7) Should speak distinctly, slowly and audibly
- 8) Speak with assurance.
- 9) Should address the judge by saying Sir or your honour
- 10) Should not underestimate the medical knowledge of the lawyers
- 11) Should not lose the temper
- 12) Should be polite, pleasant and courtesy

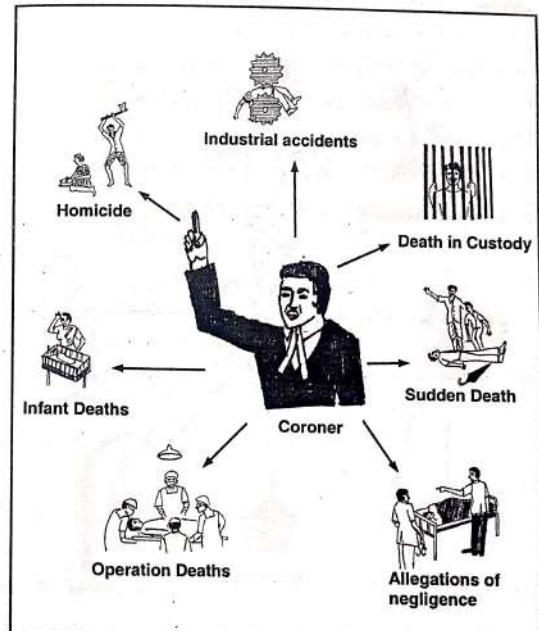


Figure of – Deaths that must be reported to a Coroner

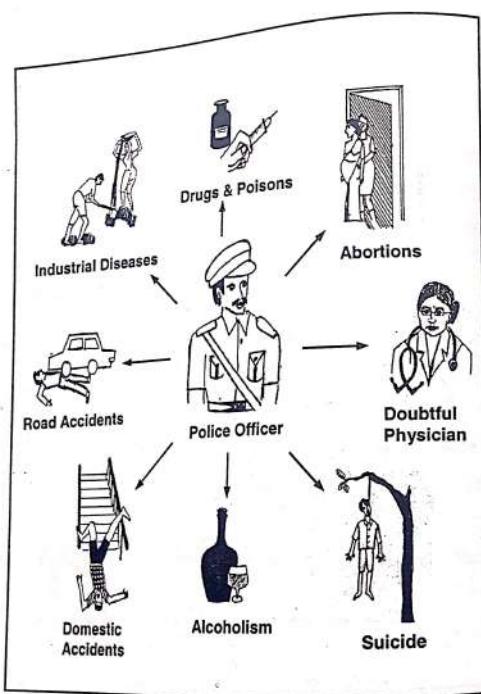


Figure of – Deaths that must be reported to a Police Officer

Declaration of Geneva:

The oldest code of Medical ethics is the Hippocratic Oath. It is now re-stated by the world association and is known as "Declaration of Geneva", the medical council of India is following as "Code of ethics".

At the time of registration every applicant must submit written and signed declaration to the concerned registrar, attested by the registrar himself or a registered medical practitioner.

- 1) I solemnly pledge myself to consecrate myself to the service of the humanity.
- 2) I will give to all my teachers the respect and gratitude, which is their due.
- 3) I will practice my profession with conscience and dignity.
- 4) The health of my patients will be my first consideration
- 5) I will maintain by all means in my power the honor and the noble traditions of medical professions.
- 6) My colleagues will be my brothers
- 7) I shall not permit consideration of religion, Nationality, Race, party, politics, or social standing to intervene between my duty and my conception.

- 8) I will respect the secrets confided in me
- 9) I will maintain the utmost respect for human life from the time of conception
- 10) Even under threat I will not use my medical knowledge contrary to the laws of the humanity

Professional Secrecy:

The physician is obliged to keep secret, all that he comes to know concerning about the patient in the course of his professional work. If the physician discloses, it becomes failure in trust and confidence. The patient can register a case against the physician for the disclosure and that has led to harm him and is not in the interest of the public.

The following points may be noted:

- 1) Without the consent of the patient the doctor should not discuss the illness of the patient with others.
- 2) The physician should not disclose any facts about the illness without his consent to parents, if he is a minor.
- 3) When a doctor examines a government servant on behalf of the government, he cannot disclose the nature of the illness to the government without the patients consent.

- 4) In divorce and nullity cases no information should be given without the consent of the person concerned
- 5) Medical officers in government service are also bound by the code of professional secrecy.

Privileged Communications:

It is the bonafide statement given upon by the concerned authority upon any subject matter. If the doctor discloses professional secrets for the purpose of protecting the interest of the community, He will not be liable to damages. The examples for privileged communications are

- A) Infectious diseases
- B) Veneral diseases
- C) Suspected crime
- D) Notifiable diseases.

Professional Negligence: (Malpraxis)

It is the lack of reasonable care or skill on the part of treating the patient, which causes bodily injury or death of the patient.

Professional negligence is of three types:

- Civil
- Criminal
- Ethical

Civil Malpraxis:

This refers to civil court, where the doctor causes injury to the patient due to negligence; the compensation amount is proportional to the injury.

Criminal Malpraxis:

This refers to criminal court, where the Doctor's negligence has led to the death of the patient.

Ethical Malpraxis:

If a Doctor violates the code of medical ethics, it provokes the condemnation of the doctor's profession.

Medical Certificate:

They can be regarded as the simplest forms of documentary evidence relating to ill health, unsoundness of mind, death etc. They can be issued by duly qualified and registered medical practitioner and are accepted in courts of law as evidence as to the facts stated in the medical certificate.

Medical Certificate of ill health:

I have examined Shri/Shrimati _____ S/o W/o D/o whose signature /thumb impression is given below. He was found to be suffering from He is under my treatment from ----- to ----- he is advised rest for a period of ----- day's viz. from ----- to -----

Signature of Patient

Signature of the Attested
Medical officer

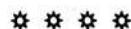
Signature of Medical Officer

Stamp -----
Date -----

Medical Certificate for Insanity:

The certificate of unsoundness of mind should be issued only when the patient writes an application stating the reasons of his want of the certificate. The certificate issued by the doctor should also have the additional notes of;

- 1) Nature of illness
- 2) Duration of illness
- 3) Time of treatment
- 4) Whether fit to write a will or not.



Chapter No. 2

Discussion of Age: Determination of Age and Identification.

Identification of a person or dead body means the recognition of that person or dead body. It is based on certain physical characteristics, which are unique to that individual.

Identification is necessary in:

- 1) Living persons.
- 2) Recently dead persons.
- 3) Decomposed dead body.
- 4) Mutilated bodies.
- 5) Skeleton.
- 6) Medico legal cases.
- 7) Mixing up of newborn babies.
- 8) Assault of rape, murder etc.
- 9) Marriage, Passport, missing persons.
- 10) Claims of property, insurance etc.

Identification of the Dead Body is done in the following Circumstances

- 1) Explosions
- 2) Firing

- 3) Railway or Plane accidents

- 4) Floods

- 5) Death where foreplay is suspected

Identification Data:

The following are the criteria for the identification,

- 1) Race and Religion
- 2) Sex
- 3) Age
- 4) Complexion and Feature
- 5) Hair and its distribution
- 6) Finger and Foot prints
- 7) Identification Scars, Tattoo marks, Occupation marks
- 8) Hand writing
- 9) Gait, Habits, Manners
- 10) Speech and Voice
- 11) Photographs
- 12) Blood Examination

Race:

- 1) Complexion – Indian skin – Brown
- Europeans skin – Fair
- Negroes skin – Black
- 2) Eyes – Indians Eye – Black/Dark
- Europeans Eyes – Blue/Gray

- 3) Hair
 - Indians - Black, thin hair
 - Europeans - Straight, wavy hair
 - Mongolian - Coarse and Dark

Religion:	
Hindu Males	Muslim Males
Sacred thread, caste marks On forehead, pierced ear lobes Caste mark on forehead, hand and are not circumcised.	Normally circumcised may have corns on lateral aspect of knees and feet as they bend and sit during prayer.
Hindu Female	Muslim Female
May have vermillion on head Silver ornaments on toe, tattoo Marks, nose ring aperture opening for earrings.	May have nose ring Aperture in left nostril

Sex:-

- Sex has to be determined in the following cases:
 1) For the purpose of simple identification in a living or dead person.
 2) In marriage

- 3) In Divorce
 4) Impotence
 5) Rape (Sexual offences)

Determination of Sex from Physical / Morphological Features:

Sl. No	Features	Male	Female
1.	General built	Muscular strong & Stout	Less muscular and delicate
2.	Scalp hair	Short & Coarse	Long and fine
3.	Eye brow hair	Coarse & Thick	Fine & Thin
4.	Facial hair	Present	Absent
5.	Pubic hair	Thicker coarse Rhomboidal in shape	Thinner, finer Triangular in shape
6.	Adam's apple	Prominent	Less prominent
7.	Shoulders	Broader than hip	Hip Broader

8.	Breasts	Not developed	well developed After puberty
9.	Vagina	Absent	Present
10.	Penis	Present	Absent

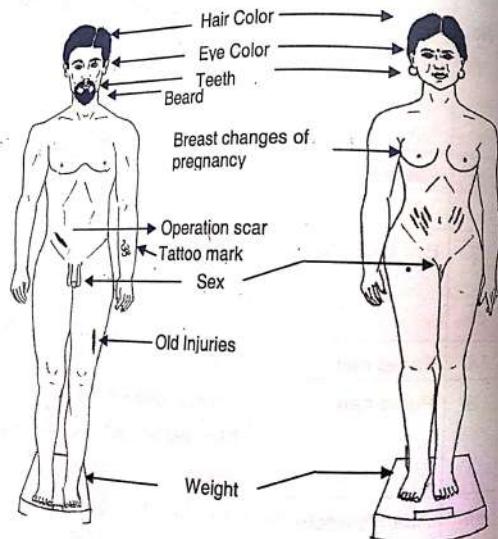


Figure of External features useful for establishing Identity.

Concealed Sex:

Criminals may try to conceal sex to avoid detection by the police by wearing costumes of opposite sex and by other means, simple undressing of the person may be rewarding in some cases, whereas in others investigation may be carried out to reach the satisfactory result.

Age:

The following points can determine age of an individual.

- 1) Teeth
- 2) Ossification of Bones
- 3) Height and weight
- 4) Secondary sexual characters

Teeth:

For the age estimation from the teeth, it is necessary to know,

- a) Difference between the two sets of teeth
- b) Time of their eruption
- c) Period, when their root calcification is complete

Temporary Teeth	Permanent Teeth
20 in number 4 incisors, 2 canines 4 Molars in each jaw (Each jaw)	32 in numbers 4 incisors, 2 canines 4 Premolars, 6 Molars (Each jaw)
Begins from six months No wisdom tooth	Appear in lower jaw first 17 - 21 yrs wisdom tooth

The presence of wisdom teeth usually begins that the subject has passed the age of 17 years. If the wisdom teeth are retained, an X-ray should be taken to ascertain. If their roots calcified, if not, there is a strong presumption that the age is below 25 years. Normally complete calcification of the roots of the teeth takes place within 3 or 4 years of the date of eruption. The extent and degree of calcification can also thus help in the estimation of age.

Ossification of Bones:

The bones of the human skeleton developed from separate ossification centers. From these centers ossification progresses till the bone is completely formed. These changes can be completely studied by means of X-ray. It is therefore possible to determine the approximate

age of an individual by radiological examinations of bones till ossification is complete.

The following points should be noted during ossification.

- 1) Variations due to dietetic, geographic hereditary factors.
- 2) In tropical conditions, ossification is observed earlier than in temperate areas.

Chronological order of Ossification Data:

- 1) By about $1 \frac{1}{2}$ to 2 years, the anterior frontale should be closed.
- 2) By the end of 2 years, the condylar portions of the occipital bone fuse.
- 3) By 4 years in females and 6 years in males, a center of ossification appears in the medial condyle of the humerus.
- 4) By 7-8 years, the rami of pubis and ischium unite.

Height and Weight:

A full term child at birth is about 45 - 50 centimeters in length. It is generally 60 centimeters at the end of six months, 68 cms at the end of 1 year, and roughly double in its length at breadth at the end of fourth year. That is 90-100 cms. The average weight at birth is

from 2.5 to 3 kgs, and this increases at the rate of approximately 0.5 kg/month. For the first year, so that normally growing child is roughly double its birth weight in the first six months and three times to its birth weight at the end of first year.

Medico legal importance of Age:

➤ **Criminal Responsibility:**

A child above five years is liable for punishment for any unlawful act under Indian railways act, any at which is done by the child under seven years is not an offence. A child of 7 to 12 years is presumed to be capable of committing an offence.

➤ **Judicial Punishment;**

"Juvenile" means a boy who is below the age of sixteen years or girl who is below eighteen years when a juvenile commits an offence the court may direct that such persons may be kept in any juvenile home.

➤ **Rape;**

Sexual intercourse by a man with a girl under fifteen years, even if she is his own wife, or with any other girl under sixteen years even with her consent is rape.

➤ **Employment;**

A child below fourteen years cannot be employed to work in any factory or mine or hazardous industry or any other risky employment.

➤ **Marriage Contract;**

A male under 21 years and female under 18 years cannot contract marriage.

➤ **Attainment of Majority;**

A person attains majority at the completion of 18 years. The person under the guardian ship of the court attains majority on the completion of 21 years.

Certificate of Estimation of Age:

In examining a person for estimating his age, the following points should be strictly noted.

- 1) The individual, who is in need of the age certificate, should give an application indicating the reasons of the need of age determination.
- 2) A female attendant should always be present if a male doctor is examining a female.
- 3) A female should undress herself or by a Nurse.
- 4) A policeman may be present at the time of examination but relatives are not allowed to be present.

Age Certificate:

"I am of the opinion that the individual by name bearing the following identification marks is aged between to years" (Lower and upper range to be given).

Identification marks: 1) 2)

Place: Medical officer
Date: Degree & Designation

Anthropometry:

Anthrops = Man Metron = Measure

It deals with the measurement of various parts of the human body. It is based on the principle that measurements of various parts of the body do not alter after the adult age (21 years) and no two persons show the same measurement in all respects. The system is therefore applicable to adults only.

It can be classified under headings,

- a) Descriptive Data: such as colour of the Hair, eyes, complexion, shape of nose, ears, chin etc.
- b) Bodily marks, Birth marks, tattoo marks, scars.

- c) Body measurements, Standing and sitting height, Length and breadth of the head, length of little Finger.

Dactylography: (Finger Prints)



Fingerprints are impression of pattern formed by the papillary or epidermal ridges of the fingertips. The finger print system is based on the principle, that the skin of the balls of the fingers and thumbs are covered with ridges and grooves, the pattern of which varies between individual and makes absolutely identification possible.

The important features of the ridges are:

- 1) They are present from birth, both on epidermis and dermis.
- 2) They remain constant for the life of the individual and cannot be altered except the destruction of the true skin.
- 3) No two hands are entirely alike, not even in the identical twins.

Footprints; (Podogram)

A footprint means an impression left by the sole of a foot. The skin pattern of toes and heels is distinctive and the impression is therefore helpful for,

- 1) Identification in relation to chance footprints, found at the scene of the crime.
- 2) To prevent deliberate or accidental substitution of babies in maternity hospitals.

A footprint produced by walking is usually large than one produced by standing.

Occupational Marks:

The occupational marks may thus indicate the identity and social position of the living or dead.

- 1) Materials like flour, paint, grease, nature of the stains on the clothing or body of a person indicative of respective work.
- 2) Rough skin on the outer side of the terminal phalanx of the left index finger caused by constant needle pricks is seen in tailors.
- 3) Smooth hands indicate – one is not used to hard manual Labour.

Scars:

The scar is a permanent cicatricial mark, which results from healing of a wound. A superficial injury involving only the epidermis does not result in a scar, if the dermis is involved, a scar is produced. On the scar there are no hair follicle, sweat glands, pigment and elastic tissue.

Examination of Scars:

- 1) Good lighting is essential
- 2) Record should include the number, site, size, shape colors etc.
- 3) Condition of the ends whether tapering or otherwise and the probable direction of the wound should also be determined.

Medico legal Significance of Scars:

The forensic importance of scars is as follows:

- 1) Scars help in identification
- 2) Shape of the scar may indicate the weapons used to make injury
- 3) Age of the scar is important in a criminal offence.
- 4) The accused may attribute scars of wounds to disease or therapeutic procedures.

Tattoo Marks:



Tattoo mark

Tattoo marks are the designs affected by multiple small puncture wounds made through the skin with needles or similar penetrating tools dipped in coloring matter (dye).

The commonly used dyes are indigo, cobalt, cinnabar, vermillion, Prussian blue etc. Permanency of the tattoo marks depends upon the type of dye used, its depth of penetration and the part of the body tattooed. Most of the marks are found on the arms, fore arms and chest.

Medico Legal Importance:

- 1) Identification of a person
- 2) Identification of the race
- 3) Identification of the religion – Cross mark in Christians, design of Hanuman in Hindus
- 4) Social status
- 5) Drug addicts – especially intravenous drug users may conceal the site of infection by a tattoo design.

Hair:

"Trichology" is the study of hair, hair grows at the rate of 0.5 mm / day and nails 0.1 mm / day

Sl. No.	Human Hair	Animal Hair
1.	It's fine	It's coarse
2.	It's thin	It's thick
3.	Cortex thick	Cortex thin
4.	Pigment evenly distributed	Pigment mostly present near medulla
5.	Medulla usually narrow	Medulla continuous and Wider

Hair plays an important role in the crime investigation, as it is one of the most identifying feature. Hair may be found at the scene of crime and may prove to be evidence. It may be found in the head of the victim suspect in an assault, in cases of rape, pubic hair may be transferred from the assailant to the victim or vice versa. In chronic poisoning by metals, the examination of hair provides essential data.

The chief examination of hair is carried to find out the;

- 1) Whether it is a hair or fiber.
- 2) Whether it is human hair or animal hair.
- 3) From what part of the body it is deprived.

- 4) To determine sex.
- 5) To estimate age.
- 6) Has the hair been altered by dying, bleaching or disease.
- 7) Did it fall naturally or forcefully pulled.
- 8) Reason for the cause of injury.
- 9) Is the hair identical with the hair of the victim or the suspect.

Hair or a fiber;

Hair consists of bulk or root or a shaft. Considerable force is required to uproot the hair from the scalp region. In most of the hairs, there are 3 well-defined layers

- a) **Cuticle** – This is the outer layer, which consists of thin non-pigmented scales.
- b) **Cortex** – This is the middle layer and consists of longitudinally arranged, elongated cells, without nuclei.
- c) **Medulla** – This is the inner layer composed of keratinised remains of cells.

Fiber;

Cotton: Fibers are flattened long tubular cells, which are twisted tubes.

Jute: Fibers are smooth without transverse lines

Silk: Consists of long clear threads without any cells.

Human Hair or Animal Hair;

Sl. No.	Human Hair	Animal Hair
1.	It's fine	It's coarse
2.	It's thin	It's thick
3.	Cortex thick	Cortex thin
4.	Pigment evenly distributed	Pigment mostly present near medulla
5.	Medulla usually narrow	Medulla continuous and wider

From what part of the body derived;

Head: Usually long, soft and tapering gradually from the root of the tip.

Beard, Moustache: Usually thicker than other part of the body

Chest, Axilla and Pubic: Short stout and curly.

Eyebrows, Eyelashes & Nostrils: Stiff, Thick and taper to a point.

Sex: Identification of sex is difficult by the hair except that of the beard and moustache. Male hair is thicker, coarser and darker.

Age: Age can be determined sometimes from the hair, the roots of hair from the children will dissolve rapidly in a solution of caustic potash, but in older people roots will resist the treatment.

At puberty axillary, pubic hair grows which is at first fine, soft and curly and later becomes coarse and pigmented.

Loss of scalp hair in men starts from the third decade grey hair usually appears after forty years.

Has the Hair been altered by Dying, Bleaching or Diseases?

Bleached hair - Brittle, dry and straw yellow

Colored hair - Color will not be uniform, the roots are of different colors

Dyed Hairs - Show characteristic fluorescence with ultraviolet light.

Did it fall Naturally or Forcibly Removed:

The base must be examined to see whether the root is present, if the hair has fallen naturally the root will be distorted and the roots sheath will be absent if the hair

is forcibly pulled out the hair bulb will be larger, irregular and the sheath will be ruptured.

Medico - legal importance:

- ❖ Hair is important in crime investigation as it remains on the clothes, body and alleged weapons in crimes.
- ❖ In rape and sodomy, the pubic hair of the victim may be found on the accused or vice versa.
- ❖ In Bestiality, animal hair may be found on the body or under clothing.
- ❖ Nature of weapon may be estimated from the injuries to the hair and hair bulb.
- ❖ Age of a person may be determined from the growth of hair on different parts of the body.
- ❖ Singeing of the hairs indicate burns or a close range or firearm injury.

- ❖ In chronic poisoning with heavy metals example arsenic the poison may be detected in the hair.

Forensic Odontology: (Dental)

The science that deals with the dentistry to aid in the administration of justice.

Medico Legal Importance:

- 1) Dental findings establish the identification of single individuals after accidental death or homicide.
- 2) Teeth are useful in estimating age of an individual.
- 3) Sex and blood group can be determined from cells of pulp cavity.
- 4) Criminals can be identified through bite marks.
- 5) Poisons (arsenic mercury) can be detected.
- 6) Color changes occur in sulphuric and nitric acid poisoning.

Hand Writing:

This is also known as calligraphy usually every one has characteristic hand writing, there may be some alterations, when it is written rapidly.

Speech and Voice:

There are certain peculiarities in every individual, at the time of speech, example lisping, stammering. A person can alter his voice by his will. No two voices are alike by

the frequencies produced at the time of utterance of the words may be helpful in detecting the actual person.

Gait:

Gait means the walking style of an individual. Every individual has their own specific gait. Only on the basis of this, it may not be sufficient to identify a person. The Gait gets altered in accidents or other diseases to the leg.

Blood Examination:

Blood plays an important role in the medico legal practices, which alone or along with other trace evidence, helps to detect the crime. The blood when collected from the scene or from the victim's body/clothing will help in detection of the crime.

Medico Legal Importance of Examination of Blood:

Civil Cases:

In Paternity/Maternity issues, divorce and nullity of marriage, compensation cases or civil negligence issues arising in hospital or medical cases refers to civil cases.

Criminal Cases:

Identification of the victim, homicide, sexual offences, death due to rash and negligent act refers to criminal cases.

Following steps are involved in Examination of Blood:

- Whether the stain is of blood or not.
- If of Blood, whether human or Animal origin.
- Age of stain, blood grouping of the stain can be done the human blood.

Deformities:

Deformities form an excellent means of identification; hence they should be carefully noted in the description of the person of a living individual or in the external examination of a dead body. They may be congenital or acquired.

- Congenital deformities, such as cleft palate, hare lip, super numerary fingers or toes, Supplementary mammae, birthmarks etc. Individual abnormalities of teeth may be detected in bite marks often seen in the skin of sexual murder or cases of rape.
- Acquired deformities such as malunited and ununited fractures of the bones of extremities are the results of previous injuries.

Post-Mortem Examination:

Exhumation: Exhumation is the digging out of an already buried body from the grave in the presence of magistrate, Police officer and Medical officer.

The body is only exhumed when there is a written order from the executive Magistrate.

The Procedure:

1. The Gravesite should be identified with identifying features, such as head stone, burial plot.
2. The distance of the grave from some of the permanent objects like tree, rocks, fence should be noted.
3. It should be conducted in natural daylight.
4. Burial should be uncovered from 10 to 15 cm at a time, a note should be made about the condition of the soil, water content etc
5. If the body is skeletonised after removing the remains, the soil must be shifted in a finely meshed screen to recover smaller objects example teeth, epiphysis, bullets etc.
6. Any fluid in the coffin should be collected.
7. The condition of the burial clothes and surface of the body should be noted.
8. Close relatives and friends should identify the body.
9. Clothes, nail, hair etc. should be picked up for examination.

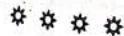
10. Exhumation should be done in the supervision of the Magistrate and the presence of medical officer and police officer.

Autopsy:

- If the body is buried recently disinfectants should not be sprinkled.
- If the body is putrefied, attempt should be made to identify the body.
- The bones should be examined if the body is reduced to skeleton.

Second Autopsy:

- The first autopsy report, photographs of the scene of death etc, should be taken before performing the second autopsy.
- The interpretation of the findings of a second autopsy performed on a previously autopsied exhumed body is difficult due to the various artifacts of burial and exhumation.
- If there is no new information obtained from second autopsy it becomes useful in clearing and ending the rumors or suspicions.



Chapter No. 3

Death and its medico legal implications: Types, signs, rigor mortis, determination of time of death.

Thanatology:

Thanatos = Death: **Logos** = Science.

The science, which deals with the study of death and its aspects, is known as **Thanatology**.

Types of Death:

There are 2 types of death, they are,

- 1) Somatic or Systemic or clinical death
- 2) Molecular or cellular death

Somatic death:

It is that state of the body showing complete cessation of the function of three important structures i.e. brain, heart and lungs. This is also known as "Tripod of life".

Molecular Death:

It is the death at the cellular level and it takes place some time after the clinical death. It is this death, which is responsible for cooling of the body, and the temperature of the body becomes, that of its environment.

It takes place after 3 to 4 hours after the stoppage of vital organ functions.

Life is maintained so long as there is circulation of oxygenated blood to live vital centers i.e. brain stem. As life is maintained by circulation of oxygenated blood, to the live vital centers in the brain stem, a new concept of death has arisen known as "Brain Death" which means irreversible loss of all cerebral functions.

Therefore the definition of death can be modified as, a person who cannot "pick up" spontaneously and survive after withdrawal of artificial maintenance can be pronounced dead.

Signs of Death:

Immediate Signs of Death: Somatic Death

- 1) Insensibility and loss of voluntary power
- 2) Cessation of circulation completely
- 3) Cessation of respiration completely

Early signs of death: Cellular Death

- 1) Changes in the eye.
- 2) Changes in the skin.
- 3) Cooling of the body.
- 4) Changes in the blood including cadaveric lividity, hypostasis etc.
- 5) Changes in the muscles including cadaveric rigidity, rigor mortis etc.
- 6) Changes in the body fluids.

Late signs of death: Decomposition and Decay:

- 1) Putrefaction
- 2) Adipocere formation or Saponification
- 3) Mummification

Transplantation:

The viability of transplantable organs falls sharply after somatic death – a liver must be taken within 15 minutes, a kidney within 45 minutes, and a heart within an hour.

Anoxia:

Anoxia means, "Lack of Oxygen". The vital functions depend upon the tissue anoxia.

Types of Anoxia:

1. Anoxic Anoxia
2. Anemic Anoxia
3. Stagnant Anoxia
4. Histotoxic Anoxia

Anoxic Anoxia:

In this type the oxygen cannot reach the lung, because of lack of oxygen to the lungs.

Occurrence:

- a) Breathing in contaminated atmosphere e.g. Fumes, Gases etc.
- b) Mechanical obstruction to the air passages eg. Strangulation, Smothering etc.

Anemic Anoxia:

In this type the oxygen carrying capacity of the blood is reduced. Example; Haemorrhage, Poisoning by carbon monoxide.

Stagnant Anoxia:

In this type there will be reduction of oxygen supply to the tissues due to impaired circulation. Eg. Embolism, Cardiac failure, shock.

Histotoxic Anoxia:

In this type, the enzymatic processes by which the oxygen in the blood is used by the tissues are blocked. Eg. Acute cyanide poisoning.

Modes of Death:

There are 3 modes of death they are as follows:

- a) Coma
- b) Syncope
- c) Asphyxia

Coma:

This is the death from failure of the function of the brain and irreversible damage to its vital centers.

Causes:

- 1) Compression of the brain resulting from injuries or diseases of the brain. Haemorrhage, epilepsy, thrombosis etc.
- 2) Poisons such as Opium, barbiturate etc.
- 3) Metabolic disorders like uremia.

Clinical features:

- 1. Incapable of sensing or responding to external Stimuli.
- 2. Skin covered with cold perspiration.
- 3. Temperature is subnormal.
- 4. Breathing and pulse rate is slow.

Post-Mortem Appearances:

- 1) Brain and its membranes are found congested.
- 2) Hemorrhage within the cranium due to the diseases.
- 3) The right side of the heart is usually full and the left empty.

- 4) The lungs and venous systems are gorged with blood.

Syncope:

In this the death occurs from the stoppage of the heart's action.

Causes:

- 1) Anemia due to the sudden and excessive Haemorrhage from injuries to large blood vessels or internal organs.
- 2) Asthenia from deficient power of heart muscle as in fatty generation of the heart.
- 3) Exhausting diseases.

Clinical Features:

- 1) Pallor of the face and lips.
- 2) Cold perspiration.
- 3) Pulse is slow, weak and fluttering in anemia.
- 4) In collapse the patient retains consciousness, though the condition is attended with failure of the heart's action.

Post-Mortem Appearances:

- The lungs, brain and abdominal organs are usually found pale.

- The heart is contracted and chambers are empty when death has occurred from anemia.
- Both the chambers are found to contain blood in case of death resulting from asthenia.

Asphyxia:

Asphyxia is caused by obstruction to the respiration, or due to lack of oxygen supply to the organs and tissues, it may even be failure to eliminate the carbon dioxide causing unconsciousness or death.

Causes:

- 1) Mechanical obstruction to the air passages. Eg. foreign bodies, tumors, suffocation, drowning etc.
- 2) Absence of sufficient oxygen as in high altitudes.
- 3) Stoppage of movements of the chest resulting from exhaustion of the respiratory muscles.
- 4) Toxic action of drugs like barbiturates or opium.
- 5) Collapse of the lungs from penetrating wounds of the thorax.
- 6) Non-entrance of blood into the lungs as in embolism.

Symptoms:

There are 3 stages, which constitute the asphyxia.

- 1) Stage of Inspiratory dyspnoea
- 2) Stage of expiratory dyspnoea
- 3) Stage of exhaustion

Stage of Inspiratory Dyspnoea:

This is the first stage, which starts immediately with the following characteristics.

- 1) The patient bears a worried and anxious look.
- 2) The pulse becomes rapid with the rise in blood pressure.
- 3) The carbon dioxide concentration in the blood becomes high, which results in deep and rapid respiratory rate.

Stage of Expiratory Dyspnoea:

This stage is preceded by the stage of dyspnoea with the following characteristics.

- 1) The accumulation of carbon dioxide stimulates the CNS, which leads to greater activity of the muscles of respiration.
- 2) Peripheral circulation is slow and there is cyanosis of the hands and feet.
- 3) The patient may become unconscious and his thinking is cloudy.
- 4) Sphincters are relaxed.

Stage of Exhaustion:

1. This is the final stage, when the respiratory centre is paralyzed, muscles of respiration become flaccid. The respiratory rate is very low and the respiration is deep, slow and sighing type.
2. Pupils become dilated.
3. Pulse becomes weak and irregular.

Note:

The total duration of time for all the 3 stages is on an average about 4 to 5 minutes.

Post-Mortem Examination:

• External:

- 1) Post-Mortem Lividity is marked because of the excess of carbon dioxide in the blood.
- 2) Face is cyanosed.
- 3) Tongue is propounded
- 4) Froth may be at the mouth
- 5) Pupils may be dilated
- 6) The petechial Haemorrhage seen under the skin all over the body or conjunctiva.

• Internal:

1. The Mucosa of the respiratory tract may be inflamed and congested.
2. The lungs are congested and edematous

3. The right side circulation is full whereas the left side circulation is empty.
4. The petechial Haemorrhage may be seen under the mucous membranes of the various organs.

Note: Petechial hemorrhages are caused due to raised venous pressure from impaired venous return resulting in over distension and rupture of venules and not to hypoxia of the vessel walls.

Sudden Death:

Death is said to be sudden or unexpected when occurs due to unnatural causes. There is no history of prolonged illness. The cause may be poisoning, violence etc. Usually 10% of the deaths reported are sudden.

Natural Death:

The death, which has occurred due to the disease without any trauma, poison playing a role in bringing it about.

Causes:

A) Diseases of the Cardiovascular System: (45 – 50 %)

- 1) Myocardial infarction
- 2) Pulmonary Embolism
- 3) Congenital diseases of new born
- 4) Left Ventricular failure as a result of hypertension
- 5) Rupture of major blood vessels.

B) Diseases of Respiratory system: (15 – 23 %)

- 1) Pulmonary oedema
- 2) Air Embolism
- 3) Carcinoma of the lungs
- 4) Pulmonary Tuberculosis
- 5) Massive collapse of a lung
- 6) Acute oedema of the Glottis.

C) Diseases of the Gastro Intestinal Tract:

- 1) Bleeding from peptic ulcer, cancer of stomach etc.
- 2) Intestinal obstruction
- 3) Rupture of a Hernia
- 4) Rupture of Spleen
- 5) Acute Pancreatitis

D) Diseases of the Central Nervous System: (10 – 18%)

- 1) Cerebral Haemorrhage
- 2) Cerebral Embolism
- 3) Brain abscess
- 4) Brain tumor
- 5) Epilepsy
- 6) Meningitis

E) Diseases of the Genito Urinary system (3 to 5%)

- 1) Acute renal failure due to stones, infection
- 2) Toxemia of pregnancy
- 3) Rupture of Ectopic pregnancy
- 4) Profuse uterine bleeding from various causes

Negative Autopsy:

Even after the laboratory investigations the microscopic examination, toxicological analysis do not give the relevant cause of death, then such a autopsy is considered as negative autopsy. Usually 2 to 5% of all the autopsies are negative.

Reasons for Negative Autopsy:

- 1) Lack of sufficient training to the doctor.
- 2) Lack of toxicological analysis
- 3) Inadequate history

- 4) Improper external examination, needle marks in drug addicts
- 5) Improper internal examination due to air embolism etc.

Obscure Autopsies:

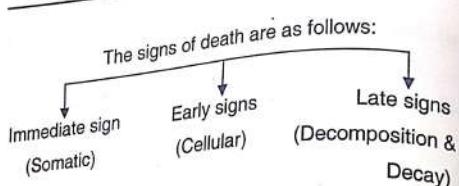
Those, which do not show a definite, a cause for death in which there are minimal or definite findings or no positive findings.

Reasons for Obscure Autopsies:

- 1) Natural disease
- 2) Biochemical disturbances
- 3) Poisoning
- 4) Concealed trauma, eg. Blunt injury to the heart
- 5) Endocrine dysfunction

Signs and Changes of Death:

In early days the stoppage of the functioning of the heart was taken as the time of death. The present concept of death includes the stoppage of respiration, heart and brain functions. The cessation of the brain cell functioning is the time of death.



Immediate Signs:

- 1) Insensibility and loss of voluntary power
- 2) Stoppage of circulation
- 3) Stoppage of respiration

Early Signs:

- 1) Changes in skin
- 2) Changes in eye
- 3) Changes in temperature of the body
- 4) Post Mortem lividity
- 5) Rigor Mortis

Late Signs:

- 1) Putrefaction
- 2) Adipocere formation
- 3) Mummification

Immediate (Somatic Death):

In sensibility and loss of voluntary power: In sensibility means loss of sensation viz. perception of touch, pain and temperature and loss of voluntary power to move. These signs cannot be taken as conclusive of death, as they are found in conditions such as fainting attacks, epilepsy, drowning etc. A flat ECG for a continuous period of 5 to 10 minutes is accepted as evidence of death.

1. Stoppage of Circulation

The stethoscope is placed over the region of the heart apex (left fifth intercostals space) for 5-6 minutes after the auscultation, if the heart sounds are not heard can be accepted as evidence of death.

Suspended Animation:

In this condition signs of life are not found. A temporary suspension of heartbeat and respiration takes place such a state is known as suspended animation. Involuntary suspended animation may occur in drowning case newborn electrocution after anesthesia. Some yogis can go into suspended animation voluntarily and remain for a period of time.

Test to Determine the Stoppage of Circulation:

1. On application and withdrawal of pressure to the fingernail, it does not assume alternately a white and pink color as in life.
2. If a small artery is cut there will be no jerky flow of blood if circulation has stopped.
3. The application of heat eg. A burning matchbox or melted ceiling wax to the skin will not produce a true blister with a red line of demarcation if circulation has stopped.
4. Usually after about 5 to 6 minutes, if the ECG shows flat energy, it can be assumed as death.

2. Stoppage of Respiration:

When the stethoscope is placed over the upper portions of the lungs where the faintest heart sounds are heard. The complete stoppage of respiration for 4 to 5 minutes usually leads to death.

For a short gap the respiration can be stopped due to

- 1) Due to voluntary act
- 2) Drowning
- 3) New born infants
- 4) Cheyne - Stokes

Tests to determine the Stoppage of Respiration:

- 1) **Mirror Test:** The surface of a mirror held in front of the open mouth and nostrils become dim, due to moist air exhaled from the lungs, if respiration is still going on.
- 2) **Feather Test:** There will be no movement of a feather or cotton fibers held in front of the mouth and nostrils if respiration has stopped.

Changes in the Skin:

- 1) The skin becomes pale
- 2) Skin loses elasticity
- 3) If injury/wound is caused after death it does not produce gaping phenomena.
- 4) There is loss of luster.

Changes in the Eye:

- 1) It loses the luster.
- 2) The corneal reflex is lost.
- 3) Pupils are dilated because of relaxation of muscles.
- 4) Pressure of eyeballs lost.

Algor Mortis (Cooling of the body):

Algor = Coldness **Mortis** = Death

During life there is balance between heat production and heat loss. After the death heat production

stops and the body loses heat by conduction, convection and radiation till it is in equilibrium with a temperature of its surroundings.

The rate of cooling is not uniform, but it is almost proportional to the difference in temperature between the body and its surroundings. The rate is therefore rapid during the first few hours after death and is slow afterwards.

A rough idea of approximate number of hours after death may be obtained by using the formula.

Normal Temperature (37°C) – Rectal temperature of the body

Rate of temperature fall per hour.

The Rate of Cooling of the body is modified by the following conditions:

- 1) Age and condition of the body
- 2) Mode of death
- 3) Surroundings
- 4) Environmental temperature

Age and Condition of the Body:

- 1) Children and adult of small stature cool rapidly
- 2) Lean body cool rapidly
- 3) Women who have fat bodies cool slowly.

Modes of Death:

- 1) In sudden death of a healthy person, body cools slowly.
- 2) Person suffering from long illness body cools rapidly
- 3) The body keeps warm longer in deaths from asphyxia, lightning and carbon monoxide.

Surroundings:

- 1) The body lying in well-ventilated room cools rapidly.
- 2) The body cools quickly in water than on land.
- 3) The body covered with clothes cools slowly when compared to the naked body.

Environmental temperature:

The body cools rapidly when the difference in environmental temperature and body is great.

Post-Mortem Lividity:

It is also known as,

- 1) Livor Mortis
- 2) Hypostasis
- 3) Suggillation
- 4) Post-Mortem Staining
- 5) Vibices

- 1) It is due to the collection of blood in the skin and subcutaneous tissue capillaries distention of the dependent parts of the body.
- 2) If the body is lying on the back the staining will be same on the posterior parts of the head, ears, neck, trunk and extremities.
- 3) It is not seen on those parts which have been compressed by tight clothing.
- 4) In Asphyxia death it is cherry red.
- 5) In potassium chloride poisoning it is chocolate color
- 6) In phosphorus poisoning it is deep blue in color

Difference between Post-Mortem Lividity & Bruise:

Sl No.	Trait	Postmortem Lividity	Bruise
1	Situation	Epidermal due to Engorged vessels	Sub epidermal due to ruptured vessels
2	Site	Occurs on the most dependent part	Occurs on the surrounding of injury
3	Appearance	No elevations in the involved area	Often swollen due to oedema
4	Edges	Clearly defined	Merge with surrounding areas
5	Color	Uniform in color	Old bruises are variegated
6	Section	On incision blood is seen in blood vessels	Shows extravasations of blood into the surrounding tissues, which is firmly clotted.

Changes in the Muscles:

The muscular changes observed after the death can be divided into the following three stages.

- 1) Period of relaxation (Primary Flaccidity)
- 2) Cadaveric rigidity (Rigor mortis)
- 3) Period of secondary relaxation

I. Primary flaccidity;

Immediately after death there is relaxation in general muscular tone with a result the lower jaw droops, pupil dilate, muscles becomes flat and flabby, joints are flexible. The molecular death does not occur for about three to four hours after somatic death, the muscles still react to external stimuli viz Mechanical, chemical or electrical.

II. Rigor Mortis:

It is also known as death stiffening or Cadaveric rigidity. This takes place after the cellular death. It is the stiffening of the muscles after death. The electrical activity of the muscle is lost and they become rigid. This phenomenon is known as rigor mortis.

The Rigor Mortis first involves the muscles of eye back of neck, lower jaw, face, and front of neck, chest, upper limb and finally lower limb.

This state lasts for a period of 24 to 48 hours in winter and 18-36 hours in summer.

Factors affecting Rigor Mortis;

- 1) **Atmospheric conditions:** In dry and cool air the rigor mortis commences slowly and lasts for a longer period than in warm and moist climates where the rigor mortis commences rapidly and is short lived.
- 2) **Age:** In children and old persons it appears early and the duration is less.
- 3) **Manner of death:** In patients of chronic disease illness and emaciation the onset is quick and the duration is less.
- 4) **Muscular condition:** The onset of Rigor Mortis is slower and the duration is more in case where the muscles are in a healthy state before death.

Difference between Rigor Mortis and Cadaveric Spasm			
Sl No.	Trait	Rigor Mortis	Cadaveric Spasm
1.	Time of onset	1-2 hours after death	Instantaneous
2.	Muscles involved	All the Muscles of the body voluntary & Involuntary	Usually Restricted to Single group of voluntary. Muscles.
3.	Medico legal importance	To know the time of death	Indicates the mode of death, suicide, Homicide accident.
4.	Body heat	Cold	Warm
5.	Molecular death	Occurs	Does not occur.

Time of Onset:

In temperate countries, it begins in 3 to 6 hours and takes further 2 - 3 hours to develop. In India it begins 1 - 2 hours after death and takes 1 - 2 hours to develop.

Duration of Rigor Mortis:

In India usually it lasts 24 to 48 hours in winter and 18 to 36 hours in summer. It lasts for 2 to 3 days in temperate regions.

Cadaveric Spasm:

Also known as instantaneous Rigor or Cataleptic rigidity.

Without passing the stage of primary relaxation the muscles becomes stiff and rigid, immediately after death. It occurs usually in cases of sudden death, fear, severe pain, cerebral haemorrhage and injury to nervous system. This is referred as a rare phenomenon.

Medico-Legal Importance;

- 1) In case of suicides the weapon may be found in the hand.
- 2) During drowning some weeds, grass may be found, grasped in hand indicating cause of death by drowning.
- 3) During a murder, the victim may have some identifying clue left by murderer, clasped in the hands.

Period of Secondary Relaxation:

The muscles become flaccid; lying loosely. This is due to the disintegration of the protein matter. They do not react chemically and physically. In certain cases Rigor Mortis passes of quickly and it is difficult to differentiate the primary relaxation from secondary relaxation.

Late Signs of Death:

These are the changes that take place in a dead body after about 24 hours since death. It comprises of decomposition and decay or a modification of this process. These signs include;

- 1) Putrefaction
- 2) Adipocere formation
- 3) Mummification

The usual bacteria are Streptococcus, Staphylococcus, Clostridia, B. Coli and B. Proteus.

Putrefaction:

Putrefaction of dead body is the final stage in the changes following death and is a certain sign of death.

It results from the breaking down of the complex organic compounds composing the tissues into simpler constituents, associated with

- > Color changes
- > Evolution of foul - smelling gases

- > Effects produced by pressure of the gases of Putrefaction.
- > Appearance of maggots.

The action is brought about by the action of bacteria – fungi.

Color Changes:

On the right and left iliac fossa the change in the color is observed, there is greenish yellow discoloration, due to the conversion of hemoglobin into sulfmethhaemoglobin. Discoloration is seen on abdomen, front of external genitalia, chest, neck and face.

- > Duration in Summer 6 – 12 hours,
- > Duration in winter 1 – 3 days.

The following changes can be seen;

- 1) Swelling in the body
- 2) Tongue protrudes completely
- 3) Lips swollen
- 4) Offensive smell from the body
- 5) Urine, faeces come out

Evolution of Foul Smelling Gases:

Due to the gas formation like ammonia, carbon monoxide, Carbon Dioxide, Hydrogen Sulphide, Methane

there is foul smell from 18 to 36 hours after death, the gas collected in the tissues. There is swelling due to gases in the face after 3 days; the face is so discolored and blotted that identification becomes very difficult. The wounds caused before or after the death, bleed because of pressure of gases within the heart and blood vessels.

Blisters:

These appear after 36 hours after death, the skin cuticle can be peeled off very easily.

Appearance of Maggots:

If putrefaction continues the flies gets attracted to the foul smell of the body the suture of the skull give way and the liquefied materials run out. The hairs and nails are pulled out easily. The putrefaction continuity makes the tissues soft, loose and dark brown.

Tissues, which purify earlier:

- 1) Larynx
- 2) Trachea
- 3) Brain
- 4) Stomach
- 5) Intestine

- 6) Liver

- 7) Spleen

Tissues that purify late:

- 1) Heart
- 2) Lungs
- 3) Kidney
- 4) Prostrate

Putrefaction in Water:

The putrefaction rate in water is slower, when compared to the ordinary atmosphere. So Post-Mortem has to be done very quickly in cases of drowning.

The putrefaction in stilled, dirty and deep water is fast. A body takes about 24 hours to come on the surface and float.

Floating of the body depends on;

- 1) **Age:** Adults float earliest; Children and old people float late.
- 2) **Built:** Strong & fat people float early.
- 3) **Sex:** Females float early than males.
- 4) **Water:** Clean water floatation takes more time than in dirty water.
- 5) **Weather:** Summer flotation is earlier than in winter.

Factors influencing the rate of Putrefaction:

- 1) Temperature: Suitable temperature is 70° F to 100° F
- 2) Access of air: Free flow of air promotes putrefaction
- 3) Age: Children body putrefy earlier
- 4) Moisture: Moisture promotes the putrefaction
- 5) Cause of death: Injured parts putrefy rapidly.

Adipocere or Saponification:

Adpos = Soft fat Cere = Wax

- 1) It is the modification of the process of putrefaction
- 2) Adipocere is a wax like substance, which is soft greasy to touch and varies in color from a dull white to dark brown.
- 3) The result of conversion of unsaturated liquid fats (Oleic Acid) to saturated solid fats.
- 4) Adipocere is usually first seen in the subcutaneous fatty depots of the cheeks, breast, buttocks and abdomen.
- 5) Fresh adipocere is soft and moist but samples are dry and brittle.

Time for Adipocere:

The time required for the formation of adipocere varies according to the climate.

- It is more rapid, when a body is submerged in water than in the buried state.
- In Europe it ranges from three months to 1 year.
- In India it is observed that it occurs from 5 – 16 days, the shortest time being 3 days & 22 hours.
- In summer the shortest time for its formation is about 3 weeks.

Medico Legal Importance of Adipocere:

- 1) When external features are preserved it helps in identification of the person
- 2) It helps in indicating the cause of death
- 3) It helps in providing the time, since death.
- 4) It indicates the place (Water, soil, ground), the body has been recovered.

Mummification:

- 1) Mummification is the modification process of the putrefaction
- 2) Here there is desiccation of dead body resulting in drying and shriveling of the parts of the body.
- 3) The skin becomes dry leathery and closely adheres to the skeleton.

- 4) A mummified body is shriveled, may be odourless and often very dark, almost black in color, the weight is lost.
- 5) The injuries may be recognized.

Time for Mummification:

- 1) The time taken for mummification is from 4 months to few years,
- 2) The time for mummification of the body depends on the size of body temperature etc.
- 3) The mummification is more rapid in bodies of infants.

Medico - Legal Importance:

- 1) It indicates the cause of death
- 2) It indicates the time lapsed since death
- 3) It helps in identification of the person, if the preservation is proper.
- 4) It indicates the place of body recovered (hot place, dry place etc)

Embalming:

A body may be mummified artificially for the purpose of its preservation by process known as Embalming.

The procedure of Embalming is by injecting fluid containing formaldehyde, or solutions of lead Sulphide and

Potassium carbonate into the femoral artery, Aorta or the Carotids.

Necessity for Embalming:

- 1) To preserve the dead bodies for anatomy dissection in Medical Colleges.
- 2) To preserve the dead bodies for the museum.
- 3) When dead bodies are transported from one country to another country for burial purposes.

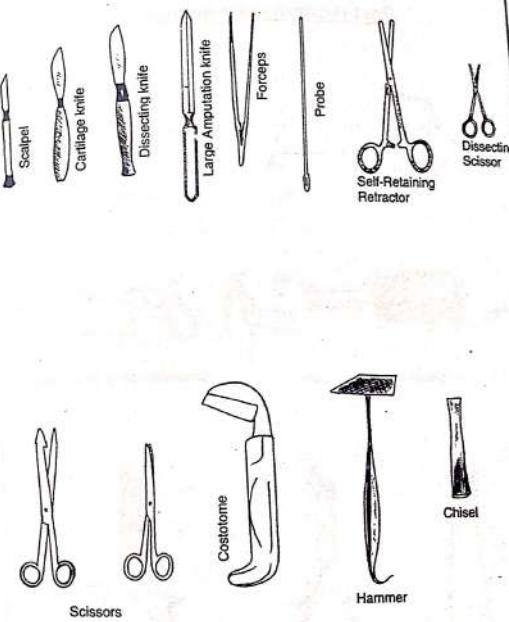
Time of Death:

The time of death is very important from medico legal point of view when a dead body is brought for post mortem examination the following points should be noted for ascertaining the time of death.

- 1) Warmth/cooling of the body
- 2) Post-Mortem Lividity
- 3) Rigor Mortis
- 4) Progress of decomposition, adipocere, Mummification.

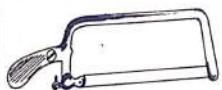
Presumption of Death:

- 1) When the death is not witnessed and the body is not found in such cases, the presumption of death is considered.
- 2) In insurance claims, inheritance of property, resolution of partners missing, a person has gone abroad and no response for a considerable time, alleged to have died.
- 3) Under sections 107 and 108 of Indian evidence act it is discussed.

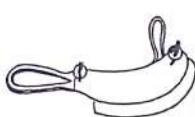


Post-mortem Instruments

Post-mortem Instruments



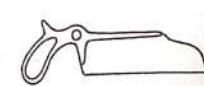
Hack Saw



Rachiotomy Saw



Electric Autopsy Saw



Councilman's blade saw



Self-Retaining Retractor



Bone Rongeur



Bone-cutting Forceps

Chapter No 4

Injuries.

Types of injuries and examination from Medico-Legal view, Electrocution etc.

Injury: Any harm caused to a person by violence is known as injury, there will be a break in the natural continuity of any tissues of the living body.

Injury				
Mechanical	Thermal	Chemical	Physical	Explosions
a) Due to blunt force 1.Abrasions 2.Contusions 3.Lacerations 4.Fractures/ dislocation	Due to cold 1.Frostbite 2.Trench foot 3.Immersion foot	1.Corrosive acids	1.X-Rays	1.Simple
b) Due to sharp force 1.Incised wounds 2.Chop wounds 3.Stab wounds	Due to heat 1.Burns 2.Scalds	2.Corrosive alkalies	2.Electricity	2.Grevious
c) Firearms 1.Firearm wounds			3.Lightening	
			4.Radio- Active Substances	

Mechanical Injury:

The mechanism of mechanical injury.

The main factors responsible for the mechanical injury are as follows.

1. Force.
2. Area over it acts.
3. Specific effect of the force.
4. Time taken for the contact.

Abrasions:

- 1) Abrasions are injuries involving loss of the superficial epithelial layer of the skin.
- 2) They are produced by a blow, a fall or a slide on a rough surface or being dragged in a ventricular accident; by scratching or grazing with the finger nail thorns or teeth bites etc.
- 3) As there is involvement of the superficial layer the healing is rapid and complete without any scar formation.
- 4) Abrasions vary in size, depending on the extent of the body surface exposed to the abrading force.

Types of Abrasions:

I. Scratches:

- 1) The length may be more compared to the width of the injury.
- 2) The injury by the pins, fingernails, needle leads to scratch type of abrasion.
- 3) A thorn or pin produces a narrow scratch, which tails off.
- 4) The Scratch produced from the tip of the knife or razor is known as point scratch.

II. Grazes or Sliding

- 1) These occur when there is movement between the skin and some rough surface in contact.
- 2) A kick from the shoe may also show grazes.
- 3) There are uneven, parallel lines with epithelial surface heaped at the end.
- 4) They occur in traffic accidents or in case of the dragging over the ground.

III. Pressure Abrasions:

- 1) When the skin is crushed as a result of constant or high pressure, this type of abrasion is known as pressure abrasions.
- 2) The Ligature mark in cases of hanging and strangulation.

IV. Impact Abrasions:

- 1) This type of abrasion results from the body coming in rough contact with a rough surface, e.g.: Tyre thread.
- 2) When a person is knocked down by a motorcar, the pattern of the radiator, tread of the tyre may be seen on the skin.

Age of the Abrasions:

- 1) A fresh abrasion is bright red in color.
- 2) An abrasion during life is followed by exudation of blood, serum that dries and forms scab.
- 3) A fresh scab is red in color and becomes reddish-brown in 2-3 days.
- 4) Healing is complete by about 10 days depending on the size of the abrasion and area involved.

Ante Mortem and Post-Mortem Abrasions:

- 1) Abrasions in the living may not be noticed if the victim is examined in poor light or if the skin is wet.
- 2) The dead body if immersed in water after the manual strangulation abrasions may not be visible until the skin begins to dry after removing from water.

Difference between Ante-Mortem and Post-Mortem Abrasions:

Trait	Ante Mortem Abrasions	Post-Mortem Abrasions
Color	Bright Reddish Brown	Yellowish, Parchment like
Exudation	More, Scab slightly raised	Less Scab often lies slightly below the level of skin
Site	Anywhere on the body	Usually on bony prominences

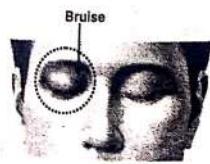
Medico Legal Importance:

The Abrasions show the significant medicolegal importance.

- 1) Nature of injury is known
- 2) Can be considered as a sign of struggle
- 3) Direction of force can be detected
- 4) Nature of crime can be detected
- 5) It may be the only external sign for an internal injury.

Contusions [Bruises]:

- A Contusion is caused by a blunt injury resulting in swelling of the part due to the effusion of blood into the neighbouring tissues from the ruptured capillaries without any discontinuing of the skin.
- In contusion there is painful swelling, crushing or tearing of the subcutaneous tissues usually without the destruction of the skin.
- When a large blood vessel is injured a tumor like mass called haematoma is formed.
- The size of the contusion varies from a pinhead to large ones.
- A fresh contusion is slightly raised above the surface of the skin and tender.
- A blow on the forehead results in the bruise around the eye.



The Factors Modifying Size and Shape:

Condition and type of tissue:

- 1) In the vascular parts like face, scrotum, vulva, if there is violence, it leads to large bruise due to more space for accumulation of blood.
- 2) In athletes and boxers, bruise is much less because of good muscle tone.
- 3) Bruising is markedly seen on tissues over laying the bone.

Age:

- 1) Children bruise more easily because of softer tissues and delicate skin.
- 2) Old people bruise easily because of loss of flesh.

Sex:

Women bruise more easily than men because the tissues are more delicate and subcutaneous fat is more.

Color of the skin:

Bruising is more clearly seen in fair skinned persons than those with dark skin.

Classification

- Intra dermal Bruise
- Subcutaneous Bruise
- Deep Bruise

Intradermal Bruise:

When a bruise is made by impact with a patterned object the haemorrhage may lie in the immediate sub epidermal layer and its pattern may correspond to the form of the object or the weapon causing it. Eg. Whips, Canes, Bicycle Chain etc.

Subcutaneous Bruise:

Due to the infiltration of blood in the subcutaneous tissues there will be blurred at the edges and raised above the skin surface. It may vary from small pin head bleeding to a large localized collection of blood known as haematoma.

Deep Bruise:

There will be bleeding in the deeper subcutaneous tissues it may take hours to two days to appear on the surface. Therefore it is recommended that an assaulted

person who is living should be once again examined after 2 to 3 days.

Medico Legal importance:

- Bruise help in giving information about,
- 1) Identification of the instrument used to cause bruise.
- 2) Degree of violence
- 3) Time of violence
- 4) Cause of injury
- 5) Possibility of infection

Note: Artificial Bruises are sometimes caused by the application of irritant substances like marking nut juice, calotropis juice etc.

Trait	Artificial Bruise	True Bruise
1.Cause	Application of juice of Vegetable irritants. Eg. Marking nut, calotropis etc	Always due to physical application of force
2.Site	Usually at accessible parts	Any where

3. Shape and Margin	Shape is irregular with regular margins, which are well defined. Vesicles may be present.	Shape is irregular with and diffuse margins. There are no Vesicles.
4. Inflammatory Reaction	Neighboring area	At the site of bruise
5. Contents	Serum	Blood
6. Itching Sensation	Present	Absent

Difference between Anti-Mortem and Post-Mortem Bruise:

Ante Mortem Bruise	Post-Mortem Bruise
Color changes and swelling seen	Absent
Actual blood is seen on the site and the surrounding area.	Absent

Lacerations:

- 1) Lacerated wounds are blunt force injuries in which tears or splits are found involving the skin and underlying tissues including subcutaneous tissues muscles, vessels etc.
- 2) If the underlying tissue is a rigid structure eg. Skull beneath the scalp, laceration occurs readily and may stimulate an incised wound, when underlying tissue is flexible eg. Cheeks, a soft parts of limb and abdomen, laceration occurs less readily and is often jagged and irregular.

Types of Laceration:

- 1) Split laceration
- 2) Stretch Laceration
- 3) Avulsion
- 4) Tears
- 5) Cut Laceration

Split Laceration:

Here the splitting occurs by crushing of the skin between two hard objects.

Stretch Laceration:

Here there is pressurised pull, which results to over stretching of the skin and peels off the underlying or deep fascia. This is usually seen in running over of the vehicles.

Avulsion (Shearing Laceration)

Here there is grinding compression by a weight such as wheel of a heavy vehicle or any heavy machinery passing over the limb, which produces avulsion of the skin. The torn skin may show extensive abrading and bruising of the margins.

Tears:

The tearing of the skin and subcutaneous tissue can occur from localized impact by or against some hard, irregular objects like door of motorcar, blows by broken glass etc.

Cut Laceration:

The cut Laceration occurs by heavy sharp edged instruments. The object which causes Lacerated wound crushes and stretches a broad area of the skin leading to a split in the centre here the edges will be irregular and rough because of crushing and tearing nature of blunt trauma.

Characteristics:

- 1) The margins of the wound are irregular and torn.
- 2) The shape of the injury does not correspond to the weapon used.
- 3) The foreign bodies like mud, oil etc may be found inside the injury.
- 4) The deeper tissues are also torn

Incised Wounds:

The injury which is made by sharp cutting instrument resulting in clean cut wound through the tissues is known as incised wound. The instruments usually are knife, scalpel, razor, sword etc. The length of an incised wound is greater than its depth, the incised wound is normally straight, but may be irregular if inflicted over an area of lax tissue like scrotum.

Characters:

- 1) The edges are clean cut, well defined and everted.
- 2) The width is greater than the edge of the weapon causing it, due to retraction of divided tissues.
- 3) The length is greater than its width and depth.
- 4) There is spindle shaped wound present.

Difference between Suicidal and Homicidal Wounds:

Suicidal wounds	Homicidal wounds
Incised wounds with hesitation cuts indicate suicide	Homicidal wounds are Without hesitation cuts
They vary in depth, wounds seen in elbows, wrists, throat etc	Associated with defense injuries often they are multiple involving face, neck and genitals.

Medico-Legal Importance:

- 1) They indicate the nature of weapon used.
- 2) The age of injury can be determined.
- 3) They give idea about the direction of the force.

Chop Wounds;

- 1) Here there is deep wound caused by a blow with sharp cutting edge usually a heavy weapon like hatchet, axe, sword etc.
- 2) The margins are moderately sharp and edges may show abrasions and bruising with marked destruction by underlying tissues and organs.

- 3) Chop wounds are commonly seen on exposed and easily accessible parts of the body such as head, face, neck shoulders etc.

Stab or Punctured wounds:

- 1) A stab wound is an injury caused by a more or less pointed weapon, when it is driven in through the skin and its depth is more.
- 2) The instruments like knife, dagger, spear, arrow is used.
- 3) The weapon entering the body is known as penetrating wound and weapon coming out of other side is known as perforating wound.
- 4) The wound of entry is generally bigger than the wound of exit because the stabbing weapon has a tapering tip.
- 5) The stab wound may cause injury to the vital organs, infectious hemorrhage to the vessels and may lead to death.

Characteristics of Stab Wound:

- 1) Depth of the wound is much greater than the length or breadth.
- 2) The shape of the wound varies according to the weapon used.

- 3) The direction of the wound gives an idea of the nature of injury (Homicidal, Suicidal or accidental)

Difference between Suicidal, Homicidal and Accidental

Stab Wound:

Trait	Suicidal wounds	Homicidal wounds	Accidental wounds
Clothing	Removed from injured area	Normally not disturbed	Not disturbed
Number	Often single	frequently multiple	Usually single
Defense wounds	Absent	Often present	Absent

Difference between Laceration, Incised Wound, Stab Wounds

Trait	Laceration wound	Incised wound	Stab wound
Weapon	Blunt object	Sharp cutting edge objects	Pointed objects

Shape	Irregular	Linear or spindle	Depends on Weapon
Site	Bony prominences	Any where	Any where usually chest, neck abdomen.
Margins	Irregular	Clean cut & averted	According to nature of weapon
Hair & blood Vessels	Crushed	Clean cut	Variable

Defence Wounds:

- 1) These are injuries sustained by a person to protect himself against the attack.
- 2) Usually seen on hands, ulnar regions, fore arm etc.
- 3) In sexual assault the Defence injury is seen more common in the lower limbs of females.
- 4) Defence injury indicates Homicide.
- 5) Defence injury is not seen, if the victim is unconscious.

Self inflicted Wounds:

- 1) The injury is produced by the person on his own body, is known as self-inflicted wound.

- 2) It is done to charge an enemy with assault or attempt to murder.
- 3) To convert simple injury to grievous one.
- 4) Usually they are cut wounds occasionally the stab wounds.
- 5) The usage of marking-nut juice (Bhallataka) to produce artificial bruise is more common.

Therapeutic Wounds:

- 1) The wounds produced by the doctor at the time of treatment are referred as therapeutic wounds.
- 2) Surgical stab wounds of the chest for insertion of chest tubes, incisions on the wrist.

Firearm Wounds (Forensic Ballistics):

Forensic Ballistics is the science dealing with investigations of firearms, ammunition and the problems arising from their usage.

A firearm is any instrument or device, designed to propel a projectile by means of explosive force of gases generated by combustion of an explosive substance.

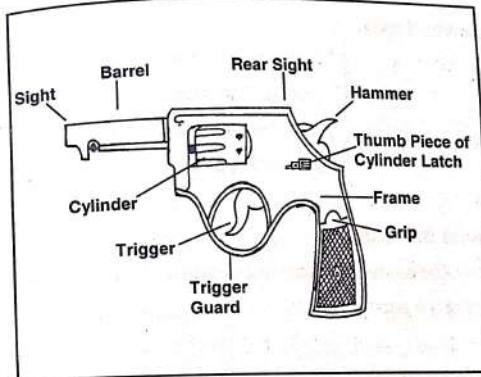


Diagram Showing general features of a Revolver

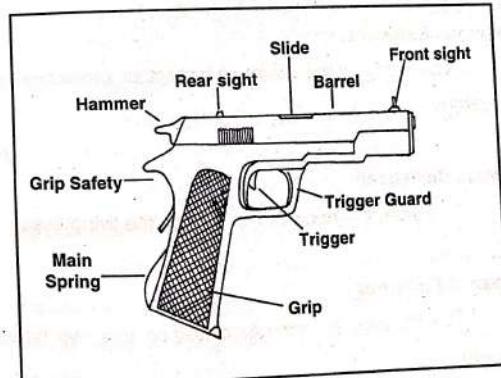


Diagram Showing general features of a Pistol

Ballistics Types:

- Exterior Ballistics
- Interior Ballistics
- Terminal Ballistics
- Wound Ballistics

Exterior Ballistics:

The study of motion of a projectile after it leaves the barrel of a firearm.

Interior Ballistics:

The study of firearm and projectiles.

Terminal Ballistics:

The study of the effect of impact of projectile on the target.

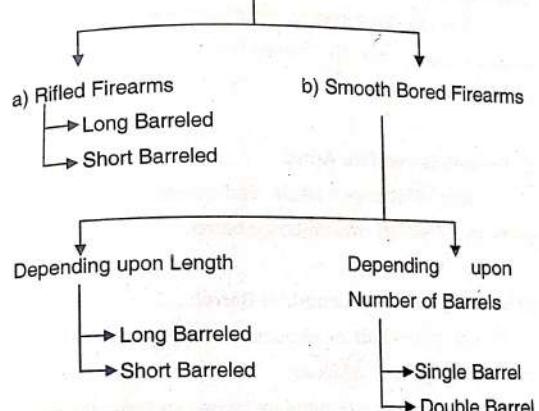
Wound Ballistics:

The study of effects of missiles on the living tissue.

Types of Firearms:

The firearms are broadly classified into two types they are;

Firearms



A) Rifled Firearms:

They discharge a single missile/bullet through a rifled board

Long Barreled: (Having high muzzle velocity)

The rifles, military rifles, sporting rifles are examples here. The word assault rifle refers to a rifle which is auto loading with large capacity and fully automatic.

Short Barreled:

The revolvers, pistols, machine guns, stenguns are example here. It has the names like "Small arms". Hand arms or hand guns.

B) Smooth Bored Fire Arms:

They discharge multiple lead pellets or a charge of shots etc. Through smooth-bored barrel.

Depending upon the Length of Barrel:

- 1) Long Barreled or shoulder-rest type like ordinary short guns or muskets.
- 2) Short barreled or hand-rest type like some varieties of carbines.

Depending upon the Number of Barrels:

- 1) Single Barreled
- 2) Double Barreled (Placed Side-by-Side or one above the other).

Ammunition:

The word ammunition is referred to any unfired assembly of primer, powder and ball, but now a days it is generally used when referring to a supply of assembled cartridges in bulk.

Cartridge:

Cartridge denotes an assembled complete round of ammunition comprising of

- 1) Cartridge case "
- 2) Percussion cap containing primer
- 3) Powder
- 4) Projectile
- 5) Wads

Cartridge Case:

It is the outer covering of the cartridge and keeps the inner components in position, prevents the backward escape of gases and also provides protection to the contents.

Percussion Cap:

It is formed either zinc or copper or a compound of both. Beneath the metal there is a layer of varnish which act as waterproof.

Primers:

The primers are composed of barium nitrates, antimony Sulphide, lead styphnate etc.

Propellant Charge:

The requirement of propellant is that, it should explode rapidly generating a mass of gas, but it should not detonate because this could damage the weapon.

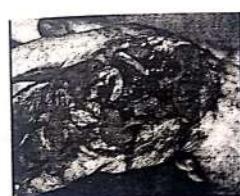
Difference between Entry and Exit wounds;

Sl	Trait	Entrance Wound	Exit Wound
1	Size	Smaller	Bigger
2	Edges	Inverted	Everted
3	Bleeding	Less	More
4	Tissues	May be cherry red due to carbonmonoxide	No color change
5	Bruising/ Abrasion	Present	Absent
6	Fibers of Clothes	Turned in	Turned out
7	Burning/ Tattooing	May be seen	Absent
8	Lead Ring	May be seen	Absent

Fig. a →
Entry wound



← Fig. b
Exit wound



Factors that influence Fire-arm Injuries;

The factors that influence firearm injuries are as follows:

- 1) Nature of the projectile
- 2) Velocity of the projectile
- 3) Distance of the fire arm from the body at the time of discharge

Nature of the Projectile;

- 1) Large bullet causes greater damage
- 2) Wound of the round bullets is larger than that of the conical ones
- 3) Conical bullets produce less Lacerations

- 4) Missiles of irregular shape produce irregular lacerated wounds with varying size

Velocity of the Projectile:

I. Bullets of High Velocity:

- 1) Wound is clean circular with punched out aperture
- 2) Perforates the body
- 3) Pattern of charge is scattered and irregular
- 4) It does not deflect from its path even when it strikes the bone.

II Bullets of Low Velocity

- 1) The wound of entrance is contused and Lacerated
- 2) It is easily deflected from its path
- 3) It may not have any wound of exit as it may get arrested in the body itself

Distance of Firearm from the body at the time of discharge;

If the fire arm is discharged from a very close distance

- A) The subcutaneous tissues over an area of 2 to 3 inches round the wound of entrance are lacerated.
- B) The adjacent hairs become singed.

- C) Clothes covering the part get burnt from the flame of the gas.

Difference between Suicidal, Accidental and Homicidal Wounds.

Sl	Trait	Suicidal	Accidental	Homicidal
1	Spot	Head or heart	Any area	Any area
2	Sex	Usually males	Usually males	Any sex
3	Scene	Own house	Own house, hunting	Any place
4	No.of wounds	Usually one	One	One to many
5	Motive	Incurable disease, Financial loss	Nil	Robbery Rape etc.

Thermal Injuries:

Thermal death results from exposure to excessive cold or heat.

Due to Cold:

The localized effects of cold are frostbite, trench foot and immersion foot.

Trench Foot and Immersion Foot:

It is due to the result of prolonged exposure to severe cold (5 to 8° C). It is seen in soldiers during warfare, especially in trenches and in persons exposed to prolonged immersion or exposure at sea.

Frostbite:

It occurs due to exposure of greater extremities of cold (-2.5° C) develops more rapidly; there is infarction of the peripheral digits with edema, redness and later necrosis of the tissues beyond a line of inflammatory demarcation. In frostbite necroses with blister formation and gangrene occurs.

Medico-Legal Importance:

Most of the deaths occur due to accidents, mountaineering, people lost in snowdrifts and those who are left unconscious in freezing temperature.

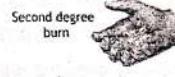
Due to heat:

Burns:

A burn is an injury to the body produced by the application of flame, some heated solids like metals etc. It leads to the destruction of the tissues. Burns can also be caused by friction examples corns in ill-fitting shoes.



First degree burn



Second degree burn



Third degree burn

Classification:

Degrees of Burn:

➤ **First degree of Burn:**

It is caused by application of heat from a flame; hot solids and hot liquids, there will be formation of redness and healing takes place without any scar formation. Few hours to few days is the time taken for recovery.

➤ **Second Degree of Burn:**

This is due to the result of application of hot solids, hot liquids above the boiling points. The involvement of superficial layer takes place. No Scar formation.

> Third degree of Burn:

This degree of burn is caused by application of hot liquids above boiling points, the superficial layers are completely destroyed resulting in the scar formation.

> Fourth Degree of Burn:

There is complete destruction of the tissue; the whole integrity of the skin is lost. The nerve ending is also destroyed. Hence the burn is painless.

> Fifth Degree Burn:

This degree of burn also involves, deep fascia of muscles, it always leads to deformities.

> Sixth Degree of Burn:

This degree of burn is often fatal, if death is not immediate; it leads to churning of limbs.

Modern classification of Burns:

The modern classification of burns is as follows:

Epidermal Burns:

The affected part is red, usually there is a blister covered by pale vascular epidermis, and surrounded by thin bright

red area of inflammation. Singeing of hair is present. These burns are very painful; repair is complete without scar formation.

Dermo-epidermal Burns:

The whole thickness of skin is destroyed there is coagulation necrosis of epidermis and dermis. There is association of pain and shock, the healing may take place within a week and scar formation may occur.

Deep Burns:

The affected area is completely charred, there being gross destruction of skin being subcutaneous tissue, muscles and bones. Nerve ending are also destroyed.

❖ **Rule of Nine:**

According to this rule the percentage of area attributed to the different parts of the body surface is as follows:

1) Head and Neck	- 9%
2) Front of chest	- 9%
3) Back of chest	- 9%
4) Front of abdomen	- 9%
5) Back of abdomen	- 9%
6) Right upper limb	- 9%
7) Left upper limb	- 9%
8) Front of right lower limb	- 9%

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9) Back of right lower limb	- 9%
10) Front of left lower limb	- 9%
11) Back of left lower limb	- 9%
12) Pudendal area	- 1%
Total	- 100%

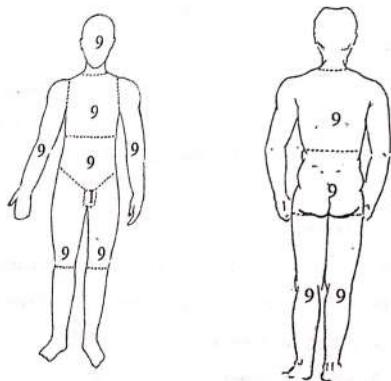


Figure of: Estimation of the extent of Surface Burns.

Causes of Death in Burns:

1) Suffocation (Asphyxia):

This is due to inhalation of smoke or gases of combustion.

2) Shock

This usually occurs in the first 48 hours of the burns, it is a neurogenic type of shock, because of extreme pain.

3) Injuries and Accidents

This could be due to the escape from fire, resulting in fatal injuries.

4) Exhaustion

Due to loss of fluids leading to dehydration.

5) Septicemia, Gangrene and Tetanus

Pugilistic Attitude:

It is also known as boxing attitude or fencing posture: It is due to heat stiffening, the legs are flexed at the hips and knees, the arms are flexed at the elbows, and held out in front of the body and the fingers are hooked like claws, this can occur whether the person is living or dead at the time of burn, the condition is due to coagulation of proteins of the muscles and the dehydration of which causes contraction.

Difference between Ante-Mortem burns, Post-Mortem Burns:			
Sl	Trait	Anti-Mortem Burns	Post-Mortem Burns
1.	Infection	Pus and sloughing	Nil
2.	Healing	Granulation	Nil
3.	Line of redness	Present	Absent
4.	Enzymes	Increase in enzymes	No such increase
5.	Vesicles	Contain albuminous fluid	Contain air

Suicidal Burning:

Suicidal burning is relatively common among Indian women, due to dowry, domestic worries, and cruelty by the husband or due to disease. The kerosene is poured on or the clothes are dipped in kerosene and then set on fire.

Homicidal Burning;

Homicidal cases are commonly seen in suspected character of the women, or in case of dowry issue. In the adult females the burns may be seen at the pudenda

region as a punishment for adultery, the body is then burnt to conceal the crime.

Post Mortem Appearances:**External:**

- 1) Clothes of the deceased should be handled and observed carefully for evidence of kerosene, petrol, etc.
- 2) Prolonged application of hot objects may lead to Rosting and charring.
- 3) Reddening and vessication of the skin is produced by moist heat eg. Boiling water or steam.
- 4) Blackening and Tattooing may be seen due to Coal, mine explosions.

Internal:

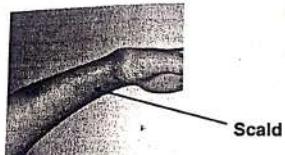
- 1) If suffocation is the cause of death, coal particles can be traced in the respiratory tract.
- 2) Liver show fatty change.
- 3) Spleen and adrenals are congested.
- 4) Kidney may show cloudy swelling, capillary thrombosis and even infarction.
- 5) Pleura may be inflamed and there may be effusion into the pleural cavity.

Self inflicted Burns:

Burns are sometimes self-inflicted in order to support a false charge.

Scalds:

A Scald is an injury, which results from the application of liquid above 60° C or from steam, the destruction impact is not as deep as in burns. Formation of redness appears at once, and blisters are seen within a few minutes. Scalds show soddening and bleaching but do not singe the hair.



Occurrence:

Scalds are usually seen due to accident, due to bursting of hot water bottles, bursting of boilers etc. Boiling water may be thrown with the intention of causing injury. Murder by Scalding is rare.

Electrocution:

The passage of electric current through the human body is capable of producing a wider range of effects,

varying from insignificant localized muscular spasm and little or no contact burns to instantaneous death.

Cause of Death:

Death may result from instant shock due to vagal inhibition. With domestic supply it usually results from ventricular fibrillation with high voltage, death is usually due to electro thermal injury or from paralysis of respiratory centre.

Circumstances of Electrocution:

Deaths due to Electrocution need to be thoroughly investigated and documented for reasons of compensation and for instituting future measures in relation to safety and prevention. A worker working on the electric line, if dead, should be suspected for electrocution. Thorough examination of the hand and mouth should be done, blood and viscera should be examined, the clothes of the victim should be properly described and preserved.

Accidental Electrocution:

Majority of the fatalities usually result from the accidental contact with the low voltage currents, normally 220 – 240 Volts, which is usually house hold supply,

accident may occur from a faulty line, while working with an electric cooking heater, room heater or inside the bathroom from a heating coil, accidents occur while repairing high tensions over head wire connections. While flying a kite with the ordinary string, a boy happens to touch a live electric wire, with his kite and was burnt.

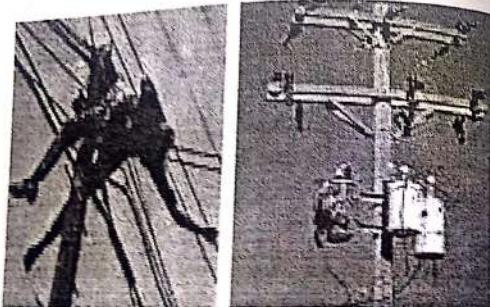


Figure of Electrocution

Suicidal Electrocution:

Electrocution mode of suicide is a rare mode. Here the victim usually winds wire round the wrists or other parts of the body, makes the connection with the wall-socket and switch it on.

Homicidal Electrocution:

Homicide by electrocution is rare. The bathroom soap dish is connected to a source of electric current in such a manner that it could lead to death by operating a switch in other room.

Iatrogenic Electrocution:

Accidents have occurred in the course of treatment of patients with electrical equipment. Electrical hazards are seen in intensive care units, operating theatre, X-ray room or during electrical connection to the heart.

Judicial Electrocution:

In USA the death sentence is carried out in an electric chair. The condemned person is made to sit on the wooden chair and a metal electrode is placed over his shaved scalp and the other metal electrode around one leg. The current is passed through the body.

Lightning:

High voltage currents are produced in thunderstorm for a short period of time. In lightening the discharge may be from cloud to cloud or between cloud and ground. Some of the electric discharges may take the direction of the earth and injure the persons in the vicinity of the discharge.

Symptoms:

- 1) If the lightning is of very high voltage the person immediately dies of concussion or circulatory collapse.
- 2) Severe burns and lacerations may also lead to subsequent death.
- 3) Marks of entry and exit of the current in the body may be noticed in the form of wounds, burnt clothes, torn shoes or holes in the shoes.

Post mortem Appearances:

1. The clothes are burnt or torn at the point of entrance and exit
2. Laceration and haemorrhage in the brain.
3. Lungs may be congested.
4. External marks of injuries may be present or absent.

Medico-legal Importance:

The person may be found dead in an open field, the body may show contusions, lacerations and fractures. The diagnosis should take place on the history of a thunderstorm in particular locality, evidence of lightning effects in the vicinity of the body.

Treatment:

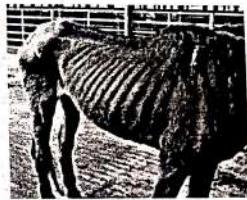
- 1) Artificial respiration should be immediately started and continued for 4-5 hours before finally giving up.
- 2) Cardio respiratory stimulants should be given.
- 3) Defibrillators may be helpful.

Starvation

Starvation is also known as Inanition, it is defined as deprivation of food and fluid, which is necessary in quantity and quality, which helps to maintain the life.



Starvation



Starvation in Animals

Types of Starvation:

There are two types of Starvation they are as follows,

- 1) Acute
- 2) Chronic

Acute: Acute Starvation results from sudden and complete stoppage of food.

Chronic: Chronic Starvation results from gradual deficient supply of food.

Reasons of Starvation:

- 1) Being trapped in the mines. Pits and landslides.
- 2) Neglect of the food by the Parents/Guardians.
- 3) Willfully withholding of food and water.
- 4) Willfully refusing to take food.

Signs and Symptoms:

Acute Starvation:

- 1) Feeling of intense thirst.
- 2) Pain in the epigastric region
- 3) Eyes become sunken
- 4) Cheek sunk, lips dry, tongue coated and dirty.
- 5) Loss of weight
- 6) Molar bones become prominent.
- 7) Pulse is weak and rapid.

Chronic Starvation:

- 1) Feeling of illness.
- 2) Hunger, fatigue with progressive weight loss.
- 3) The individual is prone to infection because of decreased resistance.

Factors affecting Starvation:

- 1) Age: The young and the old suffer the worst.

- 2) Sex: Females can withstand starvation for a longer period.
- 3) Condition of the Body: Fat people tolerate starvation better than the thin people.
- 4) External Atmosphere: Cold weather is more harmful than hot weather.

Post-Mortem Appearances:

External:

- 1) Emaciation
- 2) Body emits offensive odour.
- 3) Eyes sunken and dry.
- 4) Tongue is dry and coated.
- 5) Bony projections become prominent.

Internal:

- 1) Lungs are usually collapsed.
- 2) GIT may be empty in majority of the cases.
- 3) Gall Bladder is distended with thick viscid, dirty looking bile.
- 4) Kidneys show atrophy of the nephron.
- 5) The Stomach and intestine shows atrophy of all coats.

Medico-Legal Importance:

- 1) Accidental starvation is common in shipwrecks, mining accidents and famines.
- 2) Homicidal Starvation is seen in infants or children.
- 3) Suicidal starvation is rare.
- 4) Few pathological conditions lead to progressive wasting and emaciation of the body viz-malignant diseases, diabetes mellitus, tuberculosis etc.

Treatment:

The Patient should be kept in a warm atmosphere and advised complete bed rest. In the initial stage liquid diet should be given orally along with I/V administration.

Asphyxial Deaths:

Asphyxia (Greek meaning pulselessness) in the forensic science, it is that form of oxygen lacuna (anoxia, hypoxia), which results from mechanical interference.

The Violent asphyxia deaths are of the following nature.

- 1) Hanging
- 2) Strangulation
- 3) Suffocation
- 4) Drowning

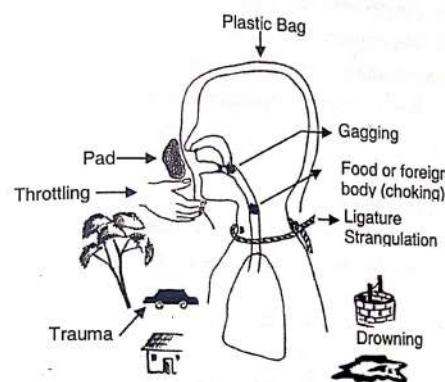


Figure of Mechanical Asphyxia

Hanging:

Hanging is a form of asphyxia where the death occurs due to compression of the neck as a result of suspension of the body by means of a ligature in such a manner that the weight of the body acts as constricting force.

Types of Hanging:

On the basis of position of the knot:

- 1) Typical hanging
- 2) Atypical hanging

Typical Hanging:

When the point of suspension is placed centrally over the occiput that is the knot is at the nape of the neck of the back.

Atypical Hanging:

In atypical hanging the commonest location for the knot is near the mastoid process or angle of mandible.

On the basis of degree of suspension.

- 1) Complete Hanging
- 2) In-Complete / Partial Hanging

Complete Hanging:

In this type of hanging the feet do not touch the ground or any other material, by making the body to suspend in the air completely.

In-Complete/Partial Hanging:

The term In-Complete or Partial hanging is used, if the hanging is in a sitting, kneeling or even lying position done. Here only a part of the body weight acts as a constricting force.

Note: The most common method of self-suspension involves taking rope, string, saree, chunni etc. Fixing it to a height point such as fan or ceiling beam etc. Making the

lower portion into a fixed loop or running noose and is placed around the neck. The victim stands on the stool, table, chair, or any other support and kicks off the support or jumps to suspend himself.

Causes of Death in Hanging:

The following are causes for death in case of hanging it may be due to one or varying combination of:

- 1) Injury to the spinal cord
- 2) Sudden stoppage of heart due to Vaso-Vagal inhibition
- 3) Mechanical constriction (Occlusion of the air way)
- 4) Occlusion of the jugular system
- 5) Occlusion of the carotid arteries.

Fatal Period:

The Fatal period usually depends upon the mechanism of death. In case of judicial hanging or hanging from a long drop resulting in injuries to the spinal cord and death occurs almost instantaneous, the usual period specified is 3-5 minutes.

Treatment.

1. The ligature should be cut to remove the constriction of neck.

2. Artificial respiration and stimulants should be given.
3. The tongue is pulled out; the nostrils are cleared off the secretions.
4. Oxygen inhalation.

Suicidal Hanging:

Hanging is a common method of committing suicide. Self-suspension is done by using a rope to a high beam, ceiling fan, branch of tree etc. The victim standing on the stool or chair kicks off it and due to suspension the death occurs. Unusual positions are where the body parts are touching the ground. Rarely the victim ties his hand together, to prevent a change of mind.

Homicidal Hanging:

It is usually rare, it is difficult for a single assailant to carry it out unless the victim is unconscious, it is not possible unless the victim is an infant or an adult who is drug induced or drunk or in unconscious state.

It may be suspected as homicide, in cases of

- 1) Signs of violence or disorder of the furniture
- 2) The clothing of the diseased is torn
- 3) Where there are injuries.

Lynching:

Lynching is homicide hanging. Here the person who has done offence is hanged publicly with a view to teach others, a lesson for committing the offence, this term is used more liberally, for any type of killing of a social offender.

Post-Mortem Hanging:

A person may be killed and later the body may be suspended to any tree or roof to make it appear as suicide. The following points should be viewed for the suspect of homicide.

- 1) One should look for the signs of dragging to the place of suspension.
- 2) The rope will be tied to the neck first and then round the beam.
- 3) There may be presence of the rope having moved from below upwards
- 4) The rope should be clearly examined for presence or absence of paint, similar to the one on the beam
- 5) Rarely, the victim arranges his suicide to appear to have been a homicide for revenge or any other purpose.

Judicial Hanging:

Judicial Hanging is one of the official methods of execution of the death sentence. The following procedure is followed in case of judicial hanging.

- 1) The face of the person is covered with black cloth.
- 2) The person is made to stand on the platform above the trap doors.
- 3) A rope is looped around the neck with the knot under the angle of the jaw and with a sufficient length of rope to allow a drop of 5-7 feet or more according to weight, age and build of the person.
- 4) When the liver is brought into action, the person drops to the length of the rope.
- 5) There will be fracture dislocation of the cervical column at the level of second or third or third and fourth cervical vertebra.
- 6) The pons and medulla may be injured.
- 7) Death is instantaneous due to damage to the spinal cord or brain stem.

Accidental Hanging:

The accidental hanging takes place in small children who get caught in the cords of window, blinds, while at play, it may occur when the children loose their grip during tree climbing and the head gets caught between the branches of the tree.

Sexual Asphyxia: (Autoerotic Hanging)

Sexual pleasure can be enhanced by partial reduction of blood supplied to the brain; this is usually seen in young males with some abnormalities in sexual behavior, usually masochism and transvestism. This is achieved by compressing the blood vessels of the neck with a padding under the constricting noose.

Difference between Suicidal and Homicidal Hanging:

SI No	Suicidal Hanging	Homicidal Hanging
1	History: There may be history of previous Unsuccessful attempts to commit suicide Usually by means other than hanging	History: No history of previous attempts by any means what so ever to commit suicide. Could be Elicited
2	Age: More common in adults and adolescents Children below age of 10 and adults below 50 Rarely commit suicide by hanging.	Age: There is no age limit for this Act, as it is done for rivalry.
3	Ligature Mark: Is as a rule oblique non continuous And high up the neck.	Ligature Mark: Is usually transversely circular, continuous and low down in the neck owing to forcible tying of the cord.

4	Knot: Usually one knot found in one or the Other side of the neck.	Knot: Is as a rule more than one in front of the neck tied with great Force.
5	Signs of Struggle: Are as a rule absent in case of suicidal hanging.	Signs of Struggle: Are almost invariably present except when the victim was asleep or a mere child.
6	Hand: Is not tied in such a manner that it is impossible for the person to commit suicide by hanging.	Hand: If found tied it is always in favour of homicidal hanging.
7	Injuries: Injuries on the body may not be found	Injuries: Presence of injuries on the body of the victim is always in favour of homicidal hanging.
8	Place of Occurrence: If in a room, the doors Windows are found closed or locked from Inside it is suggestive of suicidal hanging	Place of Occurrence: If the room doors windows are locked from outside it is suggestive of homicidal hanging.

Strangulation:

Strangulation is a violent form of death, which results from constricting the neck by means of ligature or by any other means without suspending the body.

Strangulation may be classified into two types:

1. Strangulation by ligature
2. Manual Strangulation or Throttling

Causes of Death:

- 1) Cerebral anoxia or venous congestion
- 2) Vagal inhibition
- 3) Asphyxia due to the elevation of the larynx and tongue
- 4) Fracture-dislocation of the cervical vertebra

Signs and Symptoms:

- 1) Bleeding occurs from the mouth and nose
- 2) Face becomes cyanosed
- 3) The hands are clenched

Homicidal Strangulation:

Strangulation is a common form of murder. Usually adult women become victims after frequently associated with sexual assault. Abrasions may be seen due to the movement of the ligature across the neck fingernail marks may be seen from the victim attempting to remove the ligature the marks may be sloping if the ligature is pulled upwards from behind and the position is high up at the level of the hyoid bone.

Types of Homicidal Strangulation:

- 1) Strangulation by ligature

- 2) Manual strangulation (Throttling)
- 3) Bansdola
- 4) Garroting
- 5) Mugging

I. Strangulation by Ligature:

A Ligature making it into U shape is pulled against the front and sides of the neck while standing at the back can cause death.

II. Manual Strangulation:

Asphyxia produced by compression of the neck by human hands is known as throttling. Death occurs due to occlusion of carotid arteries this is usually seen in street quarrels, or attempt to robbery where there is catching or grasping by the neck of the person. The intention may not be, to kill the person but death may occur due to the sudden degree of asphyxia which is caused leading to vasovagal shock.

If the fingertips are pressed deeply the pressure of the nails produce crescentric marks on the skin. A wet body may not show fingernail marks until drying of the skin has occurred. The tongue may or may not be bitten but is usually protruded.

Suicidal Throttling:

Suicide by throttling is not possible, because the compression of the windpipe produces rapid unconsciousness and the fingers are relaxed.

Homicidal Throttling:

Throttling is a common mode of homicide, because the hand is immediately available. The victims are usually infants, children or women.

Accidental Throttling:

A sudden application of one or both hands on other person throat as a demonstration of affection, in-joke etc. As a part of physiological experiment etc. may cause death from cardiac inhibition.

III. Bansdola:

Here two bamboo sticks are used, one is placed across the back of the neck and another across the front, both the ends are tied with a rope and the victim is squeezed to death. Some times the stick is placed across the front of the neck and the assailant stands on the both ends of the stick/bamboo.

IV. Garroting:

In this the victim is attacked from behind without any warning. The throat may be grasped or ligature is thrown over the neck and quickly tightened by twisting it with a lever (rod stick etc). This will result into sudden loss

of consciousness or collapse. The assailant then ties the ligature with one or more turns. This is done in lonely places to rob the travelers etc.

V. Mugging;

Strangulation is caused by holding the neck of the victim in the bend of the elbow. Pressure is exerted either on front of the larynx or at one or both sides of the neck by the forearm and upper arm. The attack is usually made from behind. When the neck is stamped on repeatedly, there will be crushing of larynx and trachea and bleeding in the soft tissues with swelling.

Management of Strangulation:

Since in strangulation more cases are homicidal, treatment is not required as death occurs. But if a chance of survival is present, then the following line of treatment is to be followed.

- 1) Removing of the constriction
- 2) Oxygen inhalation
- 3) Warmth to the body
- 4) Artificial respiration
- 5) Stimulants
- 6) Symptomatic line of treatment

Post-Mortem Appearances:

1) Ligature Marks:

It is transverse circular and in the lower part of the neck below the thyroid cartilage. Bruises over the neck may be seen as marks of violence if the hands have been used for strangulation, marks of fingers will be seen. The thumb impression will be the highest.

- 2) Swelling and cyanosis of face
- 3) Pupils are dilated
- 4) Hands are clenched
- 5) Incontinence of urine and faeces
- 6) Genitalia are congested
- 7) Tongue is swollen and protruded out
- 8) Lungs are congested
- 9) The Larynx, trachea and bronchial tubes are congested
- 10) Abdominal organs are also congested

Difference between Hanging and Strangulation:

Sl.	Trait	Hanging	Strangulation
1	Ligature marks	Oblique not completely encircling	Transverse, completely encircles the neck
2	Lungs	Emphysematous	Not common
3	Bleeding	From nose, mouth & ears is not common	Bleeding is common.
4	Neck	Stretched and elongated	Not so
5	Margins	Clear cut margins	Abraded and bruised
6	Hyoid bone	Fracture may occur	No fracture
7	Saliva	Often tickles down from the mouth	Not so
8	In-continence of urine and faeces	Less frequent	More frequent
9	Tongue	Swelling and protrusion is less marked	Swelling and protrusion is more marked
10	Carotid arteries	Damage may be seen	Damage is rare
11	Involuntary discharge	Faeces and urine is less common	Faeces and urine more common

12	Seminal fluid	At glance is more common	At glance is less common
13	Face	Pale, petechiae not common	Congested, petechiae Common
14	Thyroid Cartilage	Fracture is less common	More common
15	Sexual assault	No evidence of sexual assault	Sometimes evidence of sexual assault

Suffocation:

Suffocation is a form of asphyxia caused by obstruction of air to the lungs other than compression of the neck and drowning.

Smothering:

Smothering is a form of asphyxia caused by mechanical occlusion of external air passages. Viz. the nose and mouth by hand, cloth, plastic bag or any other material. Few have used synonymously with suffocation.

Suicide by Smothering:

- 1) Suicidal smothering by hand is rare
- 2) Suicide is possible by burying the face in mattress
- 3) Suicidal suffocation can be affected by tying a polythene or similar bag over the head.

Accidental Smothering:

- 1) Most fatal smothering is accidental.
- 2) Infants covered with heavy blanket or bedding will not die of smothering.
- 3) Children may be suffocated accidentally while playing with plastic bags.
- 4) It also occurs, if the membranes remain round the head, the head of the new born after delivery.

Homicidal Smothering:

- 1) Homicide is possible when the victim is on drugs, drinks, very weak, child, old person or ill health.
- 2) Usually the mouth and nose are closed by hand or cloth.

Post-Mortem Changes:

External:

- 1) When the face is pressed in the pillow, the skin around the nose and mouth may appear, pale or white.
- 2) Lips, gums and tongue may show bruising
- 3) Head and face may show intense congestion and cyanosis
- 4) Tongue may be protruded and might be bitten
- 5) Scratches, nail marks or Laceration may be seen on the victims face

Internal:

- 1) Lungs are congested, edematous and show areas of haemorrhage.
- 2) Internal organs are deeply congested and sometimes show, small haemorrhage.
- 3) If a person is buried alive, earth and sand may be found in the respiratory tract.

Gagging:

- 1) This is a form of asphyxia type of death.
- 2) Here a piece of cloth is forced into the mouth, sufficiently to block the pharynx, which will cause asphyxia.
- 3) The mouth and nose may be closed with cloth or any other similar material.
- 4) This is done in homicide and infants are very common.
- 5) Gagging is usually resorted to prevent the victims shouting for help and death may not be the intention.

Choking:

Choking is a form of asphyxia caused by an obstruction within the air passages. Generally, the object excites violent coughing to expel the object but if it fails it results

into choking. Death occurs due to asphyxia, vagal inhibition, laryngeal spasm and bronchospasm.

Medico-Legal importance:

Death from choking is usually accidental it occurs due to food, fish bone, denture or foreign bodies getting stuck in the air passages, swallowing of marble, coin, pea may take place in children while playing. Suicidal choking is rare, except in mental patients or prisoners who thrust a foreign body into the throat.

Cafe Coronary:

This is a condition in which a healthy but grossly intoxicated person, (restaurant patron) who begins his meal, suddenly turns blue, coughs violently, collapses and later dies. The autopsy report reveals a bolus of food being stuck in the larynx. The death is due to heart attack.

Treatment:

A blow on the back or the sternum may cause coughing, and helps to expel the foreign body.

Traumatic Asphyxia:

Traumatic Asphyxia or crush Asphyxia, as the name suggests, is a form of Asphyxia resulting from trauma to the chest, or external pressure on the chest, abdomen or back, which prevents normal respiratory movements. The traumatic Asphyxia may be due to;

- 1) Pressure on the chest from unconcerned movements of persons in a crowd example in stampede.
- 2) Loss of space within a vehicle when it is compressed or collapsed in a road accident.
- 3) In house collapse.

Post-Mortem Appearance:

- 1) Deep cyanosis of the faces
- 2) Numerous petechiae
- 3) A demarcation line
- 4) Face, Lips and Scalp may be swollen and congested
- 5) The lungs are usually dark
- 6) Internal organs are congested
- 7) Fracture of the ribs may occur
- 8) Injuries to lungs and heart.

Drowning:

Drowning is a form of violent asphyxia, death which is due to aspiration of fluid into air-passages, caused by submersion in water or other fluid. There need not be complete submersion, even if there is immersion of nose and mouth, death occurs.

Types of Drowning:

The types of drowning are as follows:

- 1) Partial drowning (only face is immersed)
- 2) Complete drowning
 - Dry Drowning
 - Wet Drowning
 - Secondary Drowning
 - Immersion Syndrome

Dry Drowning:

It is known as dry drowning, if the water does not enter the lungs, here death results from immediate sustained. Laryngeal spasm, water entering into nasopharynx or larynx or due to vagal inhibition. Dry drowning is seen in 10 to 20% of drowning cases. In children and in adults who are influenced of alcohol or sedative it occurs.

Wet Drowning:

Wet drowning is also known as primary drowning, in this the water is inhaled into the lungs, and the victim suffers severe chest pain, here death occurs due to cardiac arrest, or ventricular fibrillation.

Secondary Drowning:

Also known as post-immersed syndrome or near drowning. This refers to a submersion victim, who is resuscitated and survives for 24 hours. The person may or

may not be conscious. These persons may develop hypoxemia, electrolyte disturbances, pulmonary oedema, fever, pneumonitis, cerebral oedema and myocardial anoxia. Death may occur from half to several hours.

Immersion Syndrome:

Here death results from cardiac arrest due to vagal inhibition as a result of cold water, stimulating the nerve endings, of the surface of the body or water striking the epigastrium or cold water entering the eardrums. Falling or diving into the water by an inexperienced or horizontal fall leading to a blow on the chest, cause accident. In this type the death is rapid which is said to occur in emotionally tensed individuals.

Mode of Death:

- 1) Asphyxia – Commonest cause of death
- 2) Shock – Vagal inhibition
- 3) Syncope
- 4) Concussion
- 5) Apoplexy
- 6) Injuries
- 7) Exhaustion

Fatal Period:

Death occurs in about 5 minutes of complete submersion, Death takes place more quickly in fresh water

in 4 to 5 minutes, whereas in salt water it is about 8 to 12 minutes.

Treatment:

- 1) The wet clothes should be removed.
- 2) Mouth, throat, nostrils should be cleaned
- 3) Immediate artificial respiration should be given
- 4) Inhalation of oxygen should be done
- 5) The peripheral regions should be made warm

Drowning:

उदकपूर्णोदरमवाकिशरसमपीडयेदधुनीयाद्वयेद्वा ।
भस्मगर्शो वा निखनेदामुखात् ॥२०॥

(सु.सं.सू. २७/२०)

In case of abdomen being filled with water (drowning) the patient should be made upside down while pressing his abdomen and shaking the body, or he should be vomited or may be dug into the heap of ash up to neck.

Kayastha, green grams reaped in autumn, musta, ushira, yava and trikatu are powdered with goat's urine and made into collyrium-sticks. They are nectar like efficacious in drowning, epilepsy, insanity, snakebite, synthetic poison, poisoning.

Mechanism of Drowning;

and made into collyrium-sticks. They are nectar like efficacious in drowning, epilepsy, insanity, snakebite, synthetic poison, poisoning.

Mechanism of Drowning;

- 1) When a non-swimmer falls into water, he sinks due to the weight of his body.
- 2) He may rise to the surface due to natural buoyancy of his body or by vigorously making the movements of hands.
- 3) On coming to the surface, attempts are made to shout for help and breath.
- 4) Air is inhaled into the lungs water also passes into the mouth and some of this may be aspirated into the air passages and some swallowed into the stomach.
- 5) The water that is aspirated into the air passages causes violent coughing and increased panic.
- 6) The specific gravity of body is thereby raised and the body will sink below the surface once again.
- 7) Irregular movements of the limbs may once again bring him to the surface.
- 8) Due to inhalation of more water he may again sink.

- 9) This will happen several times during the air is lost from the clothing, energy reserves are exhausted, and finally the body sinks to the bottom.
- 10) Water in the respiratory passages acts as an irritant and stimulates secretion of mucous.

Post-Mortem Examination:

External:

- 1) The Clothing is wet, if it is examined soon after the body is taken out of water
- 2) Face is pale, pupils are dilated and eye half open, tongue is protruded out.
- 3) Decomposition sets early.
- 4) White froth or foam is seen in the mouth & nostrils.
- 5) The skin of hands and feet shows a breached and sodden appearance. This is known as "Washer Women's hand"
- 6) The penis and scrotum are retracted and contracted particularly in winter.
- 7) Rigor Mortis appears early.

Internal:

- 1) The lungs contain plenty of water
- 2) The lungs are voluminous and distended
- 3) The food particles aspirated from stomach into the respiratory tract can be noticed.

- 4) The water content found inside the stomach gives the idea of the water in which the victim drowned.
- 5) Brain is congested and hyperemic.
- 6) In fresh water drowning, water passes from lungs to the blood thus giving rise to a congestive heart failure.
- 7) In seawater drowning, water passes from the blood into the lungs.

Medico-Legal Importance:

The following points can be considered in case of drowning:

- 1) Whether death was caused by drowning
- 2) Whether drowning was suicidal, homicidal or accidental
- 3) The length of time, the body was in water.

I. Whether Drowning caused the Death:

In North India, it is seen that the dead bodies are thrown into running streams. Many times it so happens that after murder by inducing poison the bodies are thrown into water stream. So it becomes necessary for a careful examination of the body. The following points may be appreciated in case of drowning.

- 1) The presence of profuse, fine, white, leathery persistent froth in the mouth and nostrils may be seen.
- 2) The presence of a fine, white froth in the air passages
- 3) The presence of some object firmly grasped in the hands.
- 4) Bulky and oedematous water logged lungs, which exude a copious, frothy, blood stained fluid on section.
- 5) The presence of water, mud, weeds etc in the stomach or small intestine.

II. Whether Drowning was Suicidal, Homicidal or Accidental:

The survey about the modes of death has revealed that by drowning suicide committed are more in number. The murderer usually ties the hand and legs of the victim before he throws into the water; sometimes the suicides tie hands or feet to other objects before jumping into the water.

Homicidal drowning is rare except in case of infants and children. Usually the children are robbed and then thrown into the lake or water tank. It is not possible in adults because of more resistance power in them only if

they are attacked unaware or stupefied by narcotic drugs then only it is possible.

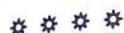
Accidental drowning is reported more in India where the percentage of deaths is higher. In floods due to heavy rains, many lives are lost. The bathing in deep water or sea water may cause death. In such cases the body may be half naked or covered with thin cloth, or swimming costume. Females may fall accidentally while drawing water from well. Children's may also accidentally fall into ponds or lakes while playing near banks of river.

III. Length of time the body was in Water.

Usually the sunken body comes to the surface a little distance away from the site of drowning. Due to putrefaction and formation of gases all bodies sooner or later come up to the surface, it is much quicker in warm water than in cold water.

IV. Injuries in Drowned Person;

Fishes, frogs, crabs and other water animals cause the injuries. Even the passing boats or ships too cause injury to the floating body usually aquatic animals attack eyelids, nose, ear lobules, fingers and scrotum.



Chapter No. 5

Knowledge of Medico-Legal aspects of Adultery, Unnatural acts, Abortions, Foeticides, Impotence, Infertility, Virginity etc.

Adultry:

- 1) The disputed paternity arises in the following circumstances viz alleged adultery and suits for the nullity of marriage, when the child is born in lawful wedlock and the husband denies that he is the father of the child and seeks divorce on this ground.
- 2) Improper conduct or association with a patient or members of the patient's family.
- 3) Voluntary sexual intercourse between a married person and a person married or not other than his or her spouse.

Impotence:

Impotence means physical incapacity to perform the act of sexual intercourse.

Sterility:

Sterility means inability on the part of the male to procreate or on the part of the female to conceive children.

Fertility:

Fertility is exactly the opposite of sterility it means the ability to procreate or conceive children.

Frigidity:

Frigidity means in-ability to initiate or maintain the sexual arousal pattern in the female.

The question of impotency and sterility may arise in the following cases:

A) Civil:

- 1) Nullity of marriage
- 2) Divorce
- 3) Disputed paternity
- 4) Claims for damages of sexual function due to accident.

B) Criminal:

- 1) Rape
- 2) Adultery
- 3) Unnatural offences

Causes of Impotence and Sterility in Males:

1. Age:

Before puberty boys cannot perform the sexual act in advanced age the power of erection and the ability to perform the coitus may diminish or disappear. Spermatozoa are not usually found before the age of puberty, but may be found in the semen of very aged men.

2. Malformations:

- A) Absence of mal development of penis.
- B) Absence of partial amputation of the penis.
- C) Acute form of hypospadius and epispadius.
- D) Congenital or subsequent loss of testicles.

3. Local Diseases:

- A) Large hydrocele
- B) Elephantiasis
- C) Scrotal hernias
- D) Cancer to genital system

4. General Diseases:

- a) Diabetes Mellitus
- b) Pulmonary Tuberculosis
- c) Insanity
- d) Endocrine Disturbances

5. Habits:

- a) Alcohol
- b) Opium

- c) Cocaine

- d) Other narcotics

6. Psychological causes:

- a) Fear and guilt
- b) Aversion
- c) Over excitement

Causes of Impotence and Sterility in Females

1) Age:

The Menstrual period in girls usually starts at the age of 13 to 14 years, this is the onset of their fertility till menopause.

2) Malformation:

- a) Congenital absence of vagina
- b) Strong adhesions of the labia
- c) Tough imperforate hymen.
- d) Absence of uterus, tubes and ovaries

3) Local Disease:

- a) Inflammatory diseases of the genital tract
- b) Tumors to the uterus
- c) Leucorrhoea

4) General Disease:

These usually do not affect the fertility of the women provided ovulation is taking place.

5) Psychological causes:

- a) Fear

b) Aversion

Sterilization:

Sterilization is a procedure to make a male or female person sterile, without any interference with potency.

It is of the following types.

Voluntary:

It is performed on married person with the consent of both the husband and wife.

It may be performed for the following purposes.

i. **Therapeutic Sterilization:** This is performed to prevent danger to the health or life of the women due to future pregnancy.

ii. **Eugenic Sterilization:**

When sterilization is performed to prevent the conception of children who are likely to be physically or mentally defective, it is known as eugenic sterilization. The main principle of this is to prevent transmission of disease and hereditary defects.

iii. **Contraceptive Sterilization:**

It is performed to limit the size of the family that is for the purpose of family planning.

Methods:

The methods will be temporary and permanent.

Permanent:

- Vasectomy in Males
- Tubectomy in Females

Temporary:

- a) Intercourse in safe periods
- b) Coitus interrupts – Ejaculation should be done after withdrawing the organ from the vagina.
- c) Use of condom in males and usage of diaphragm in females
- d) Oral hormonal pills
- e) Use of intra – uterine contraceptive devices (Loop)
- f) Use of spermicidal jellies or foam tablets.

Artificial Insemination:

Artificial insemination may be considered as deposition of semen into the vagina, cervix or uterus by instruments to bring about pregnancy, which is not attained by sexual intercourse.

Types:

It is of the following types:

- 1) Artificial Insemination Homologus (AIH)
- 2) Artificial Insemination donor (AID)

3) Artificial Insemination Homologous Donor (AIHD)

Artificial Insemination Homologous (AIH):

When the semen of the husband is biologically normal but is unable to introduce in his wife's genital tract through intercourse or may be due to some defect in the vagina. The semen from the husband is collected by masturbation and deposited into the uterus by instrumentation.

Artificial Insemination Donor (AID):

When there is defect in the seminal fluid of the husband, then semen from other healthy individual is taken and introduced inside the vagina or the uterus of the wife.

Artificial Insemination Homologous Donor (AIHD):

Here a mixture of husband semen as well as that of a donor (pooled semen) is used in cases where the motile spermatozoa count in the husband's semen is poor though present in the semen. The advantage of this method is that both husband and wife may believe that the husband's spermatozoa could have caused the fertilization and the child thus might have been the product of the husband.

Legal problems of Artificial Insemination;

Artificial insemination with the semen of the husband is justifiable and unobjectionable, since the child is actually the biologic product of both husband and wife.

When artificial insemination is done with the semen of an unknown donor, the legal issues arising there from may be as follows:

a) Danger of Litigation-

There exists a danger of Litigation against the doctor following the birth of a defective child. To avoid this, the donor must be screened for chromosomal studies for possible genetic defects.

b) Adultery-

The recipient cannot be held guilty of adultery because there is no physical union in the form of coitus. In the same way the donor is not guilty of adultery.

c) Legitimacy-

The father is not the actual father of the child and therefore the child is illegitimate and cannot inherit the property. Any attempt to conceal this fact by registering the husband as the father amounts to perjury.

Virginity:

A Virgin is a female who has not experienced sexual intercourse. **Defloration** means loss of virginity.

The question of virginity arises in case of

- 1) Nullity of marriage
- 2) Divorce
- 3) Rape

frequent handling and masturbation make the breast flabby and large.

2. Genital Signs:

a) Labia Majora:

It is firm elastic and completely covers the labia minora.

b) Labia Minora

It is small pink in the form of a thin fold which does not hang down

c) Clitoris:

It is a small narrow opening of the vestibule.

d) Hymen:

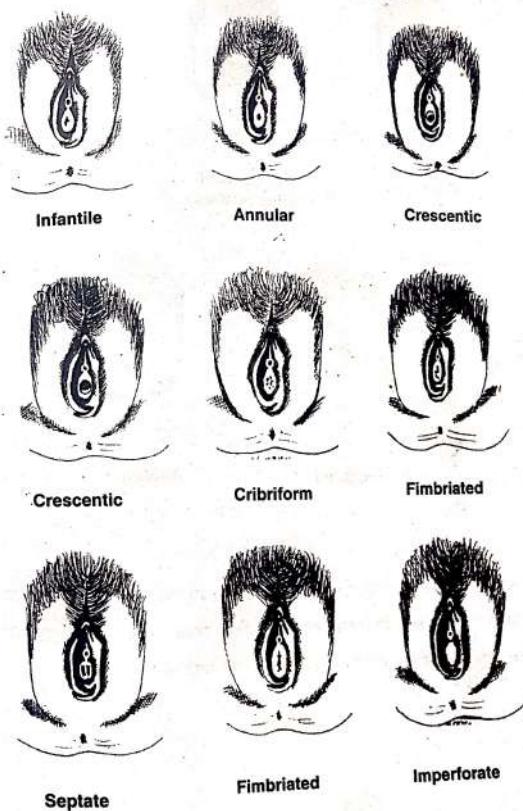
It is a thin fold of mucus membrane in the opening of the vagina. Its shape is usually semi lunar or crescentic. The central opening is rounded or elongated.

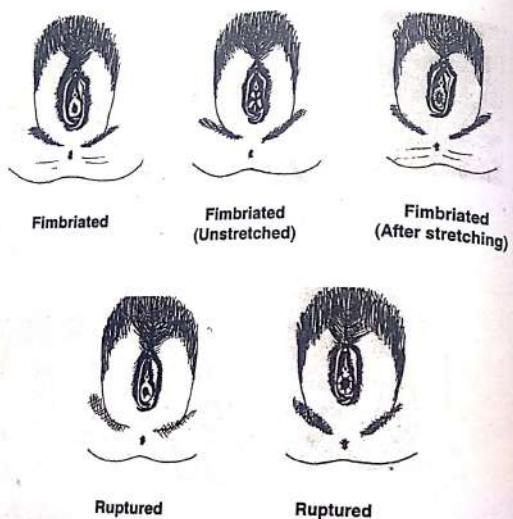
Shapes of Hymen:

The shapes of hymen are as follows:

- 1) Annular hymen (Opening is oval)
- 2) Semi-Lunar hymen (Opening is placed anteriorly)
- 3) Fimbriated hymen
- 4) Imperforate hymen (No opening)
- 5) Cribiform hymen (Several openings)
- 6) Septate hymen (Two lateral openings occurs side by side)

Figure showing 'Types of Hymen' (A)





After coitus having taken place the hymen becomes torn and takes a different shape, the tear is posteriorly or posteriolaterally on one side or both sides.

Cause of Rupture of Hymen other than Sexual Intercourse:

1) Accidental Damage:

Fall on a pointed object, slipping on a fence or during play, see saw in these cases tearing of perineum occurs, injuries to other parts may be seen along with tear to the hymen.

2) Masturbation:

Usually if masturbation is done anterior to the hymen there may be no tear of the hymen, but the labia minora and clitoris are enlarged in such cases. If objects like carrot, test tubes, and other vegetables introduced into the vagina it ruptures the hymen.

3) Forcible separation of the thighs:

It occurs in the children along with associated injury to the genitalia around the hymen.

4) Medical instrument intervention:

By the usage of instruments in the medical examination the hymen can be torn.

5) Usage of Sanitary Pads:

The usage of sanitary Tampons sometimes ruptures the hymen.

Medico-Legal Importance:

- 1) Rape
- 2) Divorce suits

3) Defamation cases

Virginity:

A female who has not experienced sexual intercourse.

Defloration: Means loss of virginity.

Difference between Virginity and Defloration:

SI	Trait	Virginity	Defloration
1	Hymen	Intact, firm inelastic with central opening admits one finger	It is usually torn and rarely intact and admits two fingers through the vagina
2	Vagina	Its firm, elastic and non pendulous	They are large, flabby and pendulous
3	Labia Majora	Firm, thick and elastic, and completely covers the labia minora	It is loose and lax and two folds are not apposed to each other
4	Labia Minora	It is small pink in the form of thin fold which cover the orifice of the virgin	It is loose and apart and hangs down. It is separate from labia Majora.
5	Breasts	They are firm, elastic and non pendulous	They are large flabby and pendulous.

Pregnancy:

Pregnancy in a female is that condition, when she carries a fertilized ovum within the uterus. It is likely to occur during the period of puberty and menopause.

Examination of Women for Pregnancy is done under the following circumstances:

1) To Bar Hard Labour:

In cases of pregnancy, the woman is exempted from hard Labour or rigorous Labour.

2) Attendance in the Court:

A woman in advance pregnancy is debarred from attending a court. In such case the doctor has to certify that the woman is in advanced pregnancy.

3) To Black-Mail:

A woman to blackmail a man or force him to marry her can pose herself to be pregnant.

4) A women may be required to undergo medical examination, if an allegation is made that she is pregnant at the time of marriage.

5) In cases of widows or married women living away from their husbands, who become pregnant.

6) In defamation cases, if pregnancy is alleged, a greater compensation is secured.

7) In case a widow is pregnant at the time of her husband's death, she can secure greater compensation from the person whose negligence has been responsible for the death of her husband.

8) If pregnancy has been suspected to be the motive behind suicide or murder of an unmarried women or a widow the dead body is subjected to examination in order to confirm pregnancy.

Note:

Before subjecting a woman to an examination for pregnancy, a written consent from the women should be taken.

Signs and Symptoms of Pregnancy in Living Women:

Subjective Signs:

- 1) Amenorrhoea
- 2) Morning sickness (Nausea with or without vomiting)
- 3) Frequency of Micturition
- 4) Quickening (First movement of Foetal)

Note: The above symptoms are alone only not reliable.

Objective Signs:

- 1) Changes in the Breast
- 2) Changes in the Vagina
- 3) Changes in the Cervix (Hegar's Sign)
- 4) Pigmentation of the skin

- 5) Foetal movement felt per abdomen
- 6) Biological tests of pregnancy

Changes in the Breast:

- 1) Increase in size and slight tenderness
- 2) Nipple prominent
- 3) Superficial venous engorgement over the breast
- 4) Appearance of Montgomery's tubercles

Changes in Vagina:

Softening and bluing of the vagina occurs, this is known as "Jacqueimer's Sign".

Changes in Cervix:

Hegar's Sign:

It is done bi-manually, the left hand is kept per abdomen and the fingers of right hand are introduced vaginally. Fingers of the two hands meet because of the softening of isthmus.

Legitimacy

Legitimacy is the legal state of a person born in lawful marriage act.

Illegitimate:

An Illegitimate child is one, which is born out of wedlock, when husband not in a position to procreate, under age of puberty.

The question of legitimacy arises in the following situations:

- 1) Inheritance of property
- 2) Affiliation cases
- 3) Superposition's children.

Delivery

Delivery means expulsion or extraction of child at birth, the medico-legal importance of ascertaining whether a woman has delivered or not is in cases of;

- 1) Abortions
- 2) Disputed virginity
- 3) Contested legitimacy
- 4) Blackmailing

Note:

Before the woman is examined a written consent has to be taken.

Signs of recent delivering in the Living:

1) Breasts:

Fully enlarged and engorged with milk, dark secondary areola, full-developed nipple, colostrum is expressed from the breast.

2) Abdominal Examination:

Uterus is hard and contracted

3) Vagina:

There may be bruises and lacerations caused at the time of delivery.

Signs of recent delivery in the Dead:

In addition to the above said signs, the uterus is found to be enlarged, flabby, contains blood clots, the ovaries and fallopian tubes are congested and large corpus luteum is usually seen in one of the ovaries.

Sexual Offences:

The Classification of sexual offences is as follows:

- Natural sexual offences
 - Unnatural sexual offences
 - Sexual perversions
-
- ❖ In **Natural Sexual Offence** the sexual involvement is forceful and through vaginal route, the act is done.
 - ❖ In **Unnatural Sexual Offence**, the sexual contact is done against the order of nature with man, women or animal (other than vagina is involved).
 - ❖ **Sexual Perversions** means the self-stimulation of the sexual organs to attain sexual satisfaction, here

sexual contact does not take place. There is no physical involvement of other partner.

I Natural Sexual Offences:

- 1) Rape
- 2) Incest

II Unnatural Sexual Offences:

1. Sodomy
2. Buccal Coitus
3. Bestiality
4. Tribadism

III Sexual Perversions:

1. Sadism
2. Masochism
3. Fetishism
4. Masturbation
5. Transvestism
6. Exhibitionism
7. Frotteurism
8. Voyeurism

Rape:

Rape is defined as unlawful sexual intercourse by a man with any woman.

- 1) Against her will

- 2) Without her consent
- 3) Getting her consent by unlawful means eg. Fraud
- 4) With her consent in unsoundness of mind or intoxication
- 5) With or without her consent, when she is under sixteen years of age.

Explanation:

Penetration is sufficient to constitute the act of rape, Sexual intercourse is not necessary for the offence of rape

Exception:

Sexual contact with his own wife against her will is not a rape, if she is not under 15 years of age.

Section 376 (Punishment for Rape):

I. Whoever, commits rape shall be punished with imprisonment of either description for a term which shall not be less than 7 years, but which may be for a term, which may extend to 10 years and shall also be liable to fine, unless the women raped is his own wife. And is not under 12 years of age, in such case, he shall be punished with imprisonment of either description for a term, which may extend to 2 years or with fine or with both.

II Whoever,

- a) Being a Police Officer commits rape,

- Within the limits of the police station he is appointed
 - In the premises of any other police station
 - On an women in his custody or others custody
- b) Being a public servant and takes advantage of his official position.
- c) Taking advantage of his official position and commits rape on his management or on the staff of a hospital.
- d) Commits rape on women knowing her to be pregnant.
- e) Commits rape on a girl who is under 12 years of age
- f) Commits gang rape

Shall be punished with rigorous imprisonment for a term, which shall not be less than 10 years.

Section 376 (A):

Intercourse by a man with his own wife during separation – Whoever has sexual intercourse with his own wife, who is living separately from him under a decree of separation or under any custom or usage without her consent, shall be punished with imprisonment of either description for a term which may extend to 2 years and shall be liable to fine.

Section 376 (B):

Intercourse by a public servant with a woman in his custody. Who ever being a public servant takes advantage of his official position and induces or seduces any woman, who is in his custody as such public servant or in the custody of a public servant subordinate to him, to have sexual intercourse with him, such sexual intercourse not amounting to the offence of rape, shall be punished with imprisonment of either description for a term which may extend to 5 years and shall also be liable to fine.

Section 376 (C):

Intercourse by a superintendent of a jail, remand home etc.:

Whoever, being a superintendent or Manager of a jail, remand home or other place of custody established by or other any institution takes advantage of his official position and induces or seduces any female inmate or such jail, remand home, place or institution to have sexual intercourse with him, such sexual intercourse not amounting to the offence of rape shall be punished with imprisonment of either description for a term which may extend to 5 years and shall also be liable to fine.

Section 376 (D):

Intercourse by any member of the Management or staff of the Hospital or with any women in that hospital.

Whoever, being on the management of a hospital or being the staff of a hospital takes advantage of his position and has sexual intercourse with any women in that hospital, such sexual intercourse not amounting to the offence of rape shall be punished with imprisonment with either description for a term, which may extend to 5 years and shall also be liable to fine.

Consent:

- 1) A Women of 16 years and above can give valid consent for sexual intercourse
- 2) The consent should be obtained prior to the act.
- 3) Even the prostitutes cannot be forced to have sexual contact against her will

Note:

The slightest penetration of the penis within the vulva, such as the minimal passage of glans between the labia with or without emission of semen or rupture of hymen, constitutes rape.

Age Factor:

No age is safe from rape; children of 1 year to 80 year-old women have been raped. Children are raped frequently because they have less resistance and due to the belief, that venereal diseases get cured by having sexual contact with a virgin.

Examination of the Victim:

Note: The police or the investigating officer should advise the victim not to change clothes, bath or douche prior to the medical examination.

I. The Procedure:

- 1) The victim should be examined by requisition from investigating police officer or the Magistrate.
- 2) The written consent should be taken from the victim.
- 3) The name of the victim, her parent, marital status, residence, occupation, time, date, year, place of examination should be noted.
- 4) Examination should be carried out without delay, as there are chances of fading of minor injuries.
- 5) Statements of the Victim: - Preliminary Affairs.
Whether she knew the accused, location of the assault, number of assailants, alcohol or intoxication involved, details of struggle, use of condoms, did ejaculation take place in act, was there bleeding from vagina, calls for help, whether consciousness was lost during the attack.
- 6) Previous history with regard to sexual intercourse, menstrual history, vaginal discharge and venereal diseases should be noted.

- 7) The victim should be examined in presence of third person, preferably nurse or a female relative.
- 8) The physician should not undress the women but she should be requested to undress herself.
- 9) If the victim is in menstrual period, a second examination should be done after the stoppage of menstruation.
- 10) Gait should be observed with care, whether there is any pain during walk should be noted.

II. Clothes Examination:

- 1) The victim should be made to stand on white paper and collect soil, buttons, hair, fibers etc.
- 2) The clothes that are worn at the time of assault or changed should be noted.
- 3) Each item of clothes should be examined for stains, tears, loss of buttons, damage etc.
- 4) Seminal stains may be found on clothes, under clothing
- 5) Grass, mud, leaves may be adhered on the buttocks or on the back of region, if the assault has been done out door.
- 6) Suspicious stains should be preserved for chemical examination.

III. General Examination:

- 1) The whole body must be examined for marks of violence especially scratches, bruises may be seen due to struggle.
- 2) Bruises and scratches may be seen on the mouth and throat, while preventing her from calling help.
- 3) Scratches may be seen on wrists and arms when the man seized her during the attack.
- 4) Injuries on the thighs and buttocks especially to the inner aspects of the thigh.
- 5) Love bites or bite marks may be seen on the breasts.
- 6) Breasts show bruises due to rough handling or manually squeezed.
- 7) The nipples may be bitten off.
- 8) The lips may produce semi-lunar marks at the periphery.
- 9) State of the bangles should be noted if present.

IV. Examination of Hair:

The pubic hair should be combed out as non-matching male pubic hair and foreign material may be present. All samples should be carefully retained, packed, sealed, labeled and then sent to the laboratory.

V. Seminal Stains:

Swabs must be taken from the area of the introitus, and perineum before hymen is examined. A low vaginal swab should be taken by gently separating the labia minora, without touching the labia or the perineum.

VI. Blood Stains:

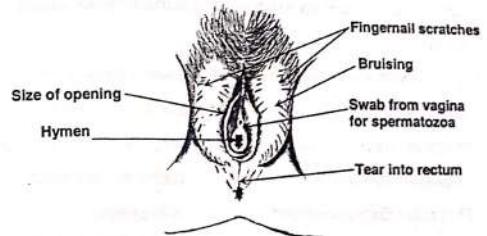
The presence or absence of bloodstains around the vagina and legs should be noted.

Examination of Genitalia:

For the examination of the genital the female should be made to lie in lithotomy position, the thighs should be well separated,

- 1) If the pubic hairs are found matted due to the presence of semen, they should be cut off, with a pair of scissors, and examined for the presence of spermatozoa.
- 2) Bruising and laceration of the external genitals, may be present with redness, tender, swelling and inflammation.
- 3) The vaginal secretion from the posterior fornix should always be obtained by introducing a plain sterile cotton wool swab and the material obtained on the swab must immediately be transferred to a

microscopic slide and spread out in the form of a thin film and fixed. After staining, the slide should be examined microscopically for the presence of human spermatozoa.



Examination for Evidence of Rape:

Examination of the Man suspected of committing Rape:

The examination of the accused is done under the following headings

- 1) Preliminary data
- 2) Physical examination and mental condition
- 3) Signs of struggle on clothes and body
- 4) Local examination of the genitals.

Preliminary Data

- a) Name
- b) Age

- c) Occupation
- d) Identification marks
- e) Time of examination
- f) Blood, swabs etc. can be collected with or without the permission of the accused.

Note:

The examination of the accused should be done as soon as it is arranged. Care should be taken that until the medical examination is completed, he should not be allowed to take bath, or wash the stains on the body.

Physical Examination:

- a) The size and physique of the assailant should be noted.
- b) Injuries on the body, particularly to the genitals should be noted.
- c) Mental condition.
- d) Signs of drunkenness should be noted.

Signs of Struggle:

- a) Injuries should be searched, which the victim says, she did on the assailant, during the struggle.
- b) Marks of violence such as bites, bruises and scratches may be found on the place, hand or private parts.

- c) The blood and seminal satins are usually found on the front of the under garments.

The Genitals:

- b) Seminal and bloodstains may be found around the pubic hair.
- c) Penis should be examined for the smegma under the prepuce.
- d) The penis is also examined for the presence of vaginal epithelial cells on its surface, unless the assailant has used a condom.

Collection for the Laboratory tests:

- Clothing
- Missing buttons
- Scraping of blood and seminal stains
- Debris under the nails
- Blood
- Urine
- Body hair/Pubic hair
- Head hair

Incest:

The act of sexual intercourse by a man with a woman who is closely related to him by blood is known as incest, e.g.

Daughter, granddaughter, sister, aunt or mother, these cases usually have psychological disorders.

Incest can be seen in

- a) Mentally defectives
- b) Alcohol inhibition
- c) Cerebral diseases
- d) Brothers and sisters separated since childhood and after a long time meet as strangers.

Unnatural Sexual Offences:

Here the sexual contact is done against the order of the nature with man, woman or animal (Sodomy, Buccal coitus, Tribadism and Bestiality).

Sodomy:

Sodomy means anal intercourse between two males or between a male and female, it was practiced in the town "Sodom", from where it acquired its name. The Greeks of the golden age also practiced it therefore sometimes it is known as "Greek Love".

The offence mostly involves two males. Sodomy is popularly referred to as Pederasty when the passive agent is a child who is known as Catamite. A Pedophile is an adult who frequently engages in sexual activities with children.

In India a class of male prostitutes called "Eunuchs", act as passive agents in Sodomy. They grow long hairs, dress like women and adopt most of the habit of female.

Anal Examination:

- 1) Anal muscle is found dilated and tender to touch.
- 2) Haematoma is seen.
- 3) Digital examination shows loss of elasticity and tone.
- 4) Tearing of the sphincter ani is rare in adults and older children, but can occur in young children.
- 5) Anal Prolapse.
- 6) Blood stains around the Anus
- 7) Pain during walk and anal examination.

Buccal Coitus:

Buccal coitus means the male genital organ is inserted into the mouth. This sin was common in a town known as "Gomorrah". Usually young children are involved in this. Teeth marks and abrasions may be seen on the penis. Death may occur due to aspiration of semen or impaction of the penis in the hypo pharynx.

Note:

The intercourse can be performed in armpits, sub mammary fissures and inter crucial folds.

Tribadism or Lesbianism:

This is female homosexuality in which two women, by mutual acts of sexual indulgence, achieve gratification. The term "lesbianism" has come from the name of an island, the Isle of Lesbos, mentioned in Greek Mythology, where the women used to practice homosexuality.

Sexual Gratification is obtained by simple lip kissing, manual manipulation of breast and genitalia. In some cases the enlarged clitoris is used as organ of passion. Tribadism is not an offence in India.

Bestiality:

Bestiality is the sexual intercourse by human being, with lower animals through anus or vagina, this can be seen in both males and females. Sheep, She-Goat, Chicken, Ducks, She-Asses etc. Dogs and cats are commonly used by the females.

The persons who go to grace the Animals, when alone may get excited with the animals. Here both the accused and the alleged animal are to be examined.

Signs seen in the accused:

- 1) Animal faeces, vaginal secretion or hair may be seen on the penis.
- 2) Marks of injuries on the body due to kicks.
- 3) Presence of animal hairs on the genitals.

Signs seen in the Animal:

- 1) Presence of Human spermatozoa, in the vagina or anus.
- 2) Presence of Gonorrhoeal discharge in the animals.
- 3) Abrasions and Lacerations with effusion of blood on the external genital.

Sexual Perversions:

Sexual perversions are acts aimed to obtain sexual gratification without sexual intercourse, a person who indulges in such acts is known as sexual pervert or deviate. Here there will be self-stimulation of the sexual organs.

Sadism: (Algolagnia)

Here sexual gratification is obtained by acts of physical cruelty or giving pain to ones partner. It may accompany with beating, biting or whipping the partner. In Sadist attack there may be chances of nipples being bitten

or insertion of bottles, Candles or sticks inside the vaginal cavity. This occurs due to Psycho Sexual incompetancy.

Masochism:

It is opposite of sadism. Here the person gets sexual gratification or arousal by being bodily tortured or abused. The term is derived from Leopold Von Sacher Masoch, an Austrian novelist who portrayed characters suffering from this perversion. As a stimulus to write, he used to get whipped by his wife.

Necrophilia:

In this condition there will be desire for sexual intercourse with dead bodies. The offence is done when the body is awaiting for burial.

Necrophagia:

Here the person sucks or licks the wounds, bites the skin and drinks or eats the flesh of the body to take sexual pleasure.

Masturbation:

Masturbation is the deliberate self-stimulation of the sexual organs to obtain sexual gratification. The penis is moved manually or rubbed against a bed or other objects. In females there may be insertions of bottles, vegetables or articles made of rubber into the genital organs. A finger may be gently and rhythmically moved over the clitoris to

attain sexual satisfaction. Masturbation when done in public places like classroom, laboratories, telephone booths, etc are punishable.

Voyeurism or Peeping tom:

Here the sexual gratification is got by observing the genitals or private parts of others. The pervert gets pleasure by observing a nude women in her privacy, in bath room while bathing, dressing or undressing, this type of people usually peep into the lighted bed rooms of others at night and are known as "peeping tom".

Exhibitionism:

Here the genital organ is exposed in the public intentionally to obtain sexual pleasure, the pervert may adopt childish behavior to attract the opposite sex. Exhibiting the organ may even lead to Masturbatory acts. Rarely women expose themselves in public. Exhibitionism is an obscene act punishable under sections 290 & 291 I.P.C.

Fetishism:

Fetishism means the use of objects of the opposite sex to attain sexual gratification. The women's under garments, petticoats, shoes etc are used as love object. Here an attempt may be done to steal the articles of the women. Usually it is seen in males. The fetish article is

stored to the satisfaction of the fetish, by touching the article it gives pleasure.

Transvestism or Eonism:

"Trans" = Opposite "Vesta" = Clothing

In this, the males find sexual pleasure in wearing female garments, the clothes worn are usually under-clothes, Brassier, knickers etc. This perversion is sometimes found in females who dress themselves in male manner.

Frotteurism:

Sexual gratification is obtained by rubbing his organ against a female in crowds, this usually occurs in crowded places, like bus stand, railway station, lifts etc. If an attempt to intercourse is made premature ejaculation occurs, it is a punishable offence under the section 290 I.P.C.

Fellatio:

Fellatio means the oral stimulation of the penis by the male or female.

Cunnilingus:

Cunnilingus means the oral stimulation of the female genitals.

Trollism:

A perverted husband gets sexual satisfaction inducing his wife to sexual intercourse with another man and watching the same.

Undinism:

In this the sexual pleasure is often obtained by witnessing the act of urination by some one of the same or opposite sex.

Indecent Assault:

Indecent assault is offence committed on the female for obtaining sexual satisfaction. The man may kiss a woman, press or fondle her breasts, insert finger in the vagina, touch the genital region, playing with vulva etc. Men may get masturbated by children. Two or more people involving in mutual masturbation, fondling of the genitalia etc. Such assaults are punishable under section 354 I.P.C. upto 2 years imprisonment with fine. Even stripping a woman naked for medical examination is regarded as assault.

Sexual Harassment:

It is an unwelcome sexual behavior, or gesture whether directly or indirectly as;

- a) Physical contact and advances
- b) A demand or request for sexual favour(s)
- c) Sexual colored remarks

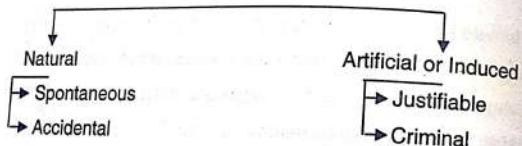
d) Showing pornography

Abortion:

Abortion is defined as expulsion of the products of conception, before the full term, for Medico-Legal purposes, the terms abortion, mis-carriage and premature Labour are used as synonymous.

Classification:

Abortion:



Natural Abortion:

Abortion may occur any time due to natural causes. Abortion occurs in 10 to 15% of all pregnancies and is most common about 2nd or 3rd month. Within the first few weeks, ovum may be passed off without being recognized.

Causes:

- 1) Defect in the Ova
- 2) Developmental defect of the fetus
- 3) Hypertension
- 4) Retroverted Uterus

5) Malformed Uterus

Spontaneous Abortion:

The abortion occurs without any induction procedures and usually coincides with the menstrual flow. The causes can be as follows.

- 1) Constitutional diseases of mother
- 2) Sudden shock, fear, sorrows etc.
- 3) Accidental trauma which separate the ovum
- 4) Local diseases of genitals

Artificial or Induced Abortion:

Induced abortion means willful termination of pregnancy before viability. It is of two types.

- a) Legal or justifiable
- b) Criminal

Legal:

When performed in accordance with the legal provisions, under the medical termination of pregnancy act (MTP) is termed as legal.

Criminal:

When performed with the criminal intention to get rid of the products of conception.

Medical Termination of Pregnancy: (MTP)

The Medical Termination of Pregnancy act passed in 1971 legalises abortions done on the following grounds.

- A) Therapeutic
- B) Eugenic
- C) Humanitarian
- D) Social

Therapeutic Grounds:

These relate to conditions where the continuance of pregnancy involves risk to the life of the pregnant woman or because of grave injury to her physical or mental health. The indications include the conditions such as

- a) Hypertension – complicated by cardiac or renal failure
- b) Nephrotic syndrome
- c) Pulmonary hypertension
- d) Toxemia of Pregnancy
- e) Uterine hemorrhages

Eugenic Grounds:

These include the conditions, in which the born child is likely to suffer from such physical or mental abnormalities so as to be seriously handicapped.

The indications include conditions such as;

- 1) Measles, Small Pox, Chicken Pox, Viral Hepatitis or other serious viral infections.
- 2) Exposure to X-Rays and other radiations

- 3) When the parents have some inheritable mental conditions or chromosomal abnormalities.

Humanitarian Grounds:

These include those cases where pregnancy has been caused by rape, the pregnancy, which has taken place due to such incidents, is presumed to constitute grave injury to her mental health.

Social grounds:

These relate to the conditions:

- a) When pregnancy in married woman, is the result of contraceptive failure.
- b) The environment of the pregnant woman, during the pregnancy and after the birth of child would involve risk to her health.

Criminal Abortions:

In India criminal abortion is resorted to mostly, by widows, who are prevented from remarriage by social customs, by unmarried girls who become pregnant from illicit intercourse, or when family honor is at stake.

Sl. No.	Natural Abortion	Criminal Abortion
1	Predisposing factors, abnormalities of the uterus, placenta, fetus and other endocrine diseases.	Illegal [pregnancy in unmarried women or widow].
2	Infection - Rare.	Frequently.
3	Marks of violence not present on the abdomen.	Marks of violence may be present on the abdomen.
4	Injuries on genital organs are not seen.	Injuries on genital organs like contusions, abrasions seen.
5	Foreign bodies not present in the genital tract.	Foreign bodies may be present in the genital tract.

Fabricated Abortion:

When a lady is assaulted she may try to exaggerate the offence by alleging that it caused her to abort. She may acquire human fetus, or animal fetus to support the charge.

Causes of Death in Criminal Abortion:

- 1) Haemorrhage and shock
- 2) Neurogenic Shock
- 3) Infection - Peritonitis
- 4) Rupture of Uterus
- 5) Renal failure
- 6) Air Embolism

Complications, which may occur, that do not cause Death.

- 1) Infection - Endometritis
- 2) Severed anemia due to persistent bleeding

Postmortem Evidence of Abortion:

The signs of recent abortion are bloodstain, vaginal discharge, lax vagina, Lacerations or wounds seen in the vagina. Uterus may be bulky and breasts may be enlarged.

Causes of death in Abortion:

- 1) Haemorrhage
- 2) Sepsis
- 3) Perforation of the uterus
- 4) Tears of the genital tract
- 5) Acute renal failure

Infanticide:

Infanticide means unlawful destruction of an infant less than 1 year of age.

Foeticide:

Means killing of the foetus at any time prior to the birth.

Neonaticide:

Is the deliberate killing of the child, within 24 hours of its birth.

Stillbirth:

A Stillborn child is one, which is born after 28th week of pregnancy and which did not breath or show any other signs of life, at any time after being completely born.

Dead Born:

A dead born child is one, which has died in uterus and shows any of the following signs after it is completely born.

- a) Rigor Mortis at delivery
- b) Signs of Maceration
- c) Signs of Mummification

I. Rigor Mortis:

Rigor Mortis may occur in a dead foetus before birth. The most common cause is antenatal haemorrhage in the mother.

II. Maceration:

This is process of aseptic autolysis of a foetus dead in uterus. It occurs when dead foetus remains in the uterus for 3 – 4 days surrounded by liquor amnii but with the exclusion of air. It does not occur if the dead foetus is born within about 24 hours.

III. Mummification:

Mummification results when death of a foetus occur from deficient supply of blood or when liquor amnii is scanty and when no air has entered the uterus.

Battered Baby Syndrome:

It is also known as child abuse syndrome, a battered child is one who has received repetitive physical injuries as a result of non-accidental violence, produced by parent or guardian. In addition to physical injury, there may be deprivation of nutrition, care and affection.

Infanticide is mostly committed by unmarried women and widows and some times married women in certain communities, where dowry is prevalent, infanticide of female child is common.

Spalding's Sign:

After death of the foetus, there occurs shrinkage of the cerebrum and as a result, there is loss of alignment and over lapping of bones of the cranial vault. It may be detected within a few days of death of the foetus, sometimes after 2 to 3 weeks.

Changes in the Lungs:

Sl. No.	Un Breathed	Breathed
1	No markings of the ribs.	Clear markings of the ribs.
2	Lung tissue does not crepitate between fingers.	Lung tissue crepitates.
3	On squeezing the lung tissue under water, the bubbles of gas that escapes are large and uneven in size.	The gas bubbles that escape are small and uniform in size. This is inspired air.
4	The appearance is uniformly dark and solid. Like liver.	The appearance is red or pinkish grey with spongy feel.
5	No air vesicles are seen	Air vesicles may some

	on surface of the lungs.	times be seen on the surface.
6	A part or whole of the lung sinks in water.	A part or whole lung floats in water.

Signs of Live Birth:

Any sign of life after complete birth of the child is accepted as proof of live birth, example, hearing a cry, seeing movements of the body or limbs muscle contraction etc, a child may cry either in the uterus or in the vagina, which may be heard by standers or even outside the room of delivery.

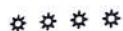
Abandoning of Infants:

If a father or mother of a child under age of 12 years or any one having the care of such child. Leaves such a child in any place with the intension of abandoning the child, shall be punished with imprisonment upto 7 years. (Section 317 I.P.C.)

Sudden Infant Death Syndrome: (SIDS)

Sudden infant death syndrome (SIDS) or cot death or crib death is defined as the sudden and unexpected

death of seemingly healthy infant, whose death remains unexplained even after a complete autopsy.



Chapter No.6

Medico-Legal discussion of Insanity:

Definition:

There is no concrete definition of insanity, law givers have used the term "Unsoundness of Mind" instead of insanity.

Synonyms:

- a) Lunacy
- b) Madness
- c) Mental derangement
- d) Mental aberrations
- e) Mental alienation

Delusion:

It is a false or erroneous belief in some thing, which is not a fact. Delusion is not always a sign of insanity. It may occur in a normal person as well as in an insane person. Delusion in an insane person is a symptom of brain disease and cannot be corrected by any amount of logic, reasoning or argument.

Varieties of Delusion:

- 1) Delusion of persecution
- 2) Delusion of jealousy

- 3) Delusion of infidelity
- 4) Delusion of reference
- 5) Delusion of influence
- 6) Delusion of self-reproach

I. Delusion of Persecution:

A man imagines himself to be very rich, may also imagine that his enemies are conspiring to ruin him financially.

II. Delusion of Jealousy:

The person has a false belief that people are jealous of him because of his position and influence.

III. Delusion of Infidelity:

The person believes that his wife is unfaithful.

IV. Delusion of Reference:

The sufferers believe that people, even strangers in the street are looking at him and items published in the newspaper are referring to him.

V. Delusion of influence:

The sufferer believes that his thoughts, feelings, actions are being influenced and controlled by some outside agency.

VI. Delusion of Self – Reproach

The person reproaches himself for the past failures and misdeeds, which are often, trifles in nature.

Illusion:

It is a false interpretation by the senses of an external object or stimulus, which has a real existence.
Eg.

1. A man may imagine a string hanging in his room and assume it to be a snake.
2. A man may mistake the stem of a tree on the roadside for a ghost.

Existence of illusions does not point to mental disease. But due to existence of mental disorder an insane person cannot analyze his illusion.

Delirium:

It can be defined as a disturbance of consciousness in which orientation is impaired, the critical faculty is blunted or lost and thought content is irrelevant or in-coherent. Delirium can be caused by diseases or by psychological factors or sometimes due to over work and drug intoxication.

Causes of Insanity:

1) Heredity:

In diseases of Huntington's chorea amaurotic family idiocy, it is seen. These are directly transmitted from the parents to the children.

2) Psychogenic causes:

The imbalance between the individual's instinctive desires and the social ideals and ethical codes results in mental aberrations.

3) Environmental factors:

Faulty parental attitude and lack of mental hygiene.

Classification of Insanity:

Medico-Legally insanity is classified as follows:

- a) Amentia or mental defects
- b) Dementia
- c) Functional insanities
- d) Insanity associated with organic diseases

Difference between Lucid interval in Insanity and Head Injury.

SL	Insanity	Head Injury
1	History of insanity	History of injury
2	Preceding symptom of insanity	Preceding symptom of concussion
3	After the lucid interval, symptoms of insanity	Symptoms of cerebral irritation and compression
4	Frequency of occurrence is often	Frequency of occurrence is rare

Hallucinations:

This means a false perception without a sensory stimulus. Any sensation may be involved. Thus in simple terms a hallucination means seeing, hearing, smelling, tasting or touching some thing that is not actually present. Visual and auditory hallucinations are more common than others.

Obsession:

By obsession, it is meant an imperative idea constantly intruding itself on the consciousness inspite of all the efforts of the sufferer to drive it out. Eg. A man after bolting the door goes to sleep. After few minutes he wakes up and checks the bolt. He may repeat it several times.

Diagnosis:

Before declaring a person insane the following points should be considered.

1) Family History:

One of the causative factor of insanity is considered to be hereditary, henceforth a history of mental condition of the complete family should be recorded, any death because of suicides epilepsy, syphilis etc should be noted.

2) Personal history:

A detailed personal history forms an important part of the diagnosis; particular reference should be made on use of drugs for addiction, sexual behavior, mental strain or shock and puberty period.

3) Physical examination:

The physical examination should especially constitute of the following.

- a) General manner of dressing and walking
- b) Deformities
- c) Speech
- d) Skin
- e) Temperature

4. Mental Examination:

The Mental examination of a patient consists of:

a) Memory testing

b) Judgment testing

c) Presence and degree of confusion

Feigned Insanity:

Insanity may be feigned by criminals to evade sentence of death or long terms of imprisonment by soldiers and policemen to leave the service and by businessmen to avoid contracts.

Difference between True insanity and Feigned Insanity:

SI	Trait	True Insanity	Feigned Insanity
1	Onset	Gradual	Sudden
2	Motive	Absent	Present
3	Insomnia	Present	Cannot persist, patient sleeps soundly after a day or two
4	Signs and symptoms	Uniform and present	Present only when conscious of being observed
5	Habits	Dirty and filthy	Not dirty and filthy
6	Sleeping surrounding	Dirty	Never dirty
7	Frequent	Does not mind	Resists for fear of

	examination	detection
8	Skin and lips	Dry, harsh

Depression:

The depressive phase is characterised by difficulty in thinking, mental depression and inhibition of motor impulses. Loss of appetite, constipation and sleeplessness towards the early morning are the physical symptoms.

Endogenous Depression:

This type of depression is believed due to some inborn predisposition, symptomatology of endogenous depression tends to be evidenced as;

- 1) Ideas of unworthiness
- 2) Loss of weight without physical cause
- 3) Inability to concentrate
- 4) Hypochondriacal delusions

Reactive Depressions:

The reactive unhappiness which occurs as a reaction to some external event in the environment is usually known as "Reactive depression"

Involutional Depression:

The illness occurs for the first time in a person's life during the involutional period between 50 – 60 years in men and between 40 – 50 years in women. There is no family history depressive disease.

Somnambulism:

It is an abnormal condition, which means walking during sleep. During this condition the mental faculties are partially active and the mind of the somnambulist is concentrated on one particular set of ideas.

Hypnotism:

Hypnotism is also known as mesmerism, this is a sleep like condition produced by artificial means or by suggestions. During a hypnotic trance a person may perform acts suggested by the hypnotist but does not remember them afterwards.

Responsibilities of an Insane:

The responsibility of an insane can be sub divided into two groups:

- a) Civil responsibility
- b) Criminal responsibility

Civil Responsibility:

1) Evidence

The validity of evidence of an insane depends upon the presiding officer of the court usually the evidence given by an insane is invalid, except when given during the face of lucid interval.

2) Consent:

The consent given by an insane is invalid because he does not understand the implications of the consent.

Relations of Contracts:

A contract is not valid if either of the dealing party person is suffering from insanity at the time of contract.
Eg. Marriage, Business etc.

Testamentary Capacity:

It is the capacity to make will valid, the will of a person is invalid if it is proved that during the time of writing the will, he was insane. The following points should be noted.

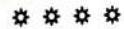
- a) The age of the individual who is writing a will should be more than 18 years.
- b) The individual should be free from any form of insanity

- c) The individual should not be under the influence of another individual.
- d) The will made by an alcohol drunk person is considered valid unless, if he is so much under the influence of alcohol that he does not understand the implication of the will and changes the will again and again.
- e) The individual who is making a will should be in a position to enumerate his property and belongings.

Criminal responsibility:

In considering the criminal responsibilities of an insane it is worthwhile to consider the following points.

- a) The insane person does not make his crime a secret. They commit the crime in public as they cannot keep a secret.
- b) Usually multiple murders are committed by the insane person either at the same time or at a different time.
- c) The insane person does not prepare himself for such an act.



Chapter No. 7

The Responsibilities, Conduct, Rules, Professional Rights and Confidentiality (Secrecy) of Physician.

Duties of a Physician:

- 1) The physician should use necessary skill, care judgment and attention in the treatment of his patients.
- 2) To use clean and proper instruments and appliances
- 3) To give in the simple language full directions to his patients or their attendance concerning the administration of remedial measures including the articles of diet.
- 4) To furnish the patients with proper and suitable medicines.
- 5) To keep confidential, the secrets of his patients communicated to him by them or discovered by him at the time of medical examination.

Rights of Registered Medical Practitioners: (RMP):

- 1) Right to practice medicine
- 2) Right to choose a patient
- 3) Right to dispense medicines
- 4) Right to add title, descriptions etc to the name

- 5) Right to recovery of fees
- 6) Right to give evidence as an expert
- 7) Right to issue medical certificate
- 8) Right for appointment to public and local hospitals

Physician Responsibility in Criminal Matters:

- 1) Under Section 202 of the Indian Penal Code, the Medical Practitioner should at once communicate to the police any information about the criminal act.
- 2) If he happens to treat a patient who has attempted to commit suicide, he is not bound by law to report him to the proper authorities, but he has to inform the police if he happens to die.
- 3) If the condition is so serious that, she is about to die (in miscarriage), he must arrange to record her dying declaration as to the cause of her condition.

Privileged Communication:

It is the statement made bonifide upon any subject matter by a doctor to the concerned authority, due to the duty to protect the interests of the community.

The following are the examples of the privileged communication.

1) Infectious diseases

The patient suffering from infectious diseases employed as cook, waiter in a hotel, children nurse etc should be advised to leave the job until he becomes non-infection. If the patient refuses, the doctor can inform the employer about the illness of his patient.

2) Venereal diseases:

If a person is suffering from syphilis and is about to marry, it is the duty of the doctor to advise the patient not to marry till he is cured, if he refuses the doctor can disclose to the concerned women or to her parents.

3) Employees:

Drivers of bus or railway engine drivers may be suffering from high blood pressure, epilepsy, colour blindness or alcoholism, the doctor should advise the patient to change his employment because of dangers of his present occupation both to himself and to the public.

Duties of the Patient;

- 1) He should furnish the doctor with complete information about past illness.

- 2) He should strictly follow the instructions of the doctor as regards diet, medicine, mode of life etc.
- 3) He should pay reasonable fee to the doctor.

Professional Confidentiality (Secrecy):

It is an implied term of contract between the doctor and his patient. The doctor is bound to keep secrets, which he comes to know while examining the patient. The disclosure of the patient's relating problems will be failure of trust and confidence. The patient can even file a case for the disclosure, which has caused damage, humiliation and is not in the interest of the public.

The following points to be noted:

- 1) Physician should not discuss about the illness of the patient with others.
- 2) If the patient is major, the doctor should not disclose any facts about illness without his consent to parents or relatives. In case of minor guardians or parents should be intimated about the illness.
- 3) In divorce and nullity cases, no information should be given without getting the consent of the person concerned.

- 4) When the doctor examines a government servant on behalf of the Government, he cannot disclose the nature of illness to the Government without the patient's consent.
- 5) A doctor should not give any information to an insurance company about a person who has consulted him before, without the patient's consent.
- 6) Medical Officers in Government Service are also bound by the code of professional Secrecy even when the patient is treated free.

Euthanasia: (Mercy Killing)

It is giving painless death to a person suffering from incurable and painful disease.

Types:

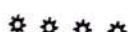
- 1) Active
- 2) Passive

Active Euthanasia:

The drugs are given in large doses to hasten death, thus by ending of a miserable, meaning less existence.

Passive Euthanasia:

Discontinuing or not using extraordinary life.
Sustaining measures to prolong life:



Chapter No 8

The attainment of Dharma, Artha, Kama and Moksha is the prime objective of Ayurveda.

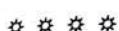
धर्मार्थकाममोक्षामारोग्यं मूलमुत्तमम् ।
रोगास्तस्यापहर्तारः श्रेयसो जीवितस्य च ॥
कः स्यात्तेषां शमोपाय इत्युक्त्वा ध्यानमास्थिताः ।
अथ ते शरणं शक्रं ददृशुध्यनिच्छ्रूषु ॥
स वक्ष्यति शमोपायं यथावदमरणः ।

(च.सू.१/१५-१६)

Health is the prime factor for a well-being, person for achieving the virtue, wealth, desires and salvation are the routes. Diseases are destroyers of health, well being and life. This has manifested itself as a great obstacle in the way of human life. Sakra (Indra) should be approached he being the King of God's will reveal the remedical measures which are suitable.

- 1) Dharma: Is associated with the soul itself
- 2) Artha: Is the attainment of wealth like gold etc
- 3) Kama: Is the fulfillment of desire like embracing women
- 4) Moksha: Is liberation from the world

5) Arogya: Equilibrium of Dhatus
For achieving these four Purusharthas (Aims of Life),
health is considered as the chief cause.



Chapter No. 9

Adharma is the soul cause of diseases therefore to follow Dharma is necessary.

In Charaka Vimana-Sthana III Chapter "Janapadadwamsavignana Adhyaya" about adharma it is elaborately mentioned.

The Route cause for Vathadi Doshas is Adharma:

- 1) The vitiation of Vatadhi Doshas takes place due to adharma or due to the previous birth sins.
- 2) This takes place due to the Pragnyaparada
- 3) When there is involvement of Desha, nagara etc leaving the Dharma and following Adharma, which becomes so advanced that the people opt Adharma in their daily routines.
- 4) The people stop worshipping the God's
- 5) This results into excess of rain or no rain at all, the air does not flow in proper way, the ponds, lakes get dried off, the medicines loose their potency.

Death in War is due to Adharma:

- 1) In wars the Janapadadhvamsa taking place by the Shastra and Asthra is mainly due to Adharma

2) When there is excess of anger, greedy, jealousy in people, they suppress the weak people and for their destruction they use the weapons.

The Attacks of Devils is due to Adharma:

By following the Adharma the people get destroyed by devils, evil spirits etc.

Curse / Shapa is also due to Adharma:

The Janapadadhvams which erupts is also mainly due to adharma. When people condemn teacher elders, Rishis and respected people, such people may be cursed by them getting converted into ashes.

From Yuga to Yuga there is gradual reduction of the followers of Dharma. Thus the following of Dharma if gets completely stopped, this may result into the destruction of the mankind. Thus the following of the Dharma is very important to be away from the diseases.



Chapter No. 10

Kayika (Physical), Vacika (Oral) and Manasika (Mental) Types of Papa (Sins).

The person should avoid the following ten sinful activities and conquer the internal enemies.

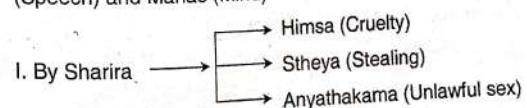
दश कर्मपथान् रक्षन् जयत्राभ्यन्तरानीन् ॥
हिंसास्तेयान्थाकामं पेशुन्यं परुषानुतम् ।
सभिन्नालापं व्यापादमभिध्यां दुग्धिपर्ययम् ॥
पापं कर्मेति दशधा कायावाङ्मानसेस्त्यजेत् ।

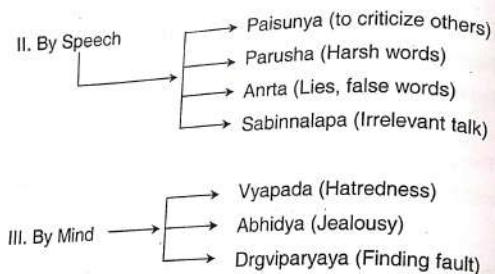
(अ.सं.सू-३/११६-११८)

हिंसास्तेयान्थाकामं पेशुन्यं परुषानुतम् ।
सभिन्नालापं व्यापादमभिध्यां दुग्धिपर्ययम् ॥
पापं कर्मेति दशधा कायावाङ्मानसेस्त्यजेत् ।

(अ.ह.सू/२)

The Sinful acts are done by the Shareera (Body), Vani (Speech) and Manas (Mind).





By cheating others or earning money, by unlawful is not of praise worthy, even if very little of money is earned, by dharma is of great value and gives the maximum pleasure. The money earned by unlawful activities even if it is given as Dhana will not meet its need.

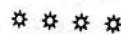
सुखार्था सर्वभूतानां मताः सर्वाः प्रवृत्तयः ।
सुखं च न विना धर्मात् तस्मात्यमेपरो भवेत् ॥
(अ.हु.सू.२/२४)

In Astanga Hrudya, it is mentioned that all the activities in human beings and animals takes place by following the dharma thus one should follow the dharma as the prime factor for all the aspects.

THE ETHICS: [Cha. Vim. Sth. 8th Chapter
Rogabhishaktiya Vimana]:

- 1) He should live with Celibacy
- 2) Should keep beard and moustaches
- 3) Should speak truth
- 4) Should not eat meat
- 5) Should use pure and intellect promoting things
- 6) Should not disobey the words of teacher except in case, which leads to Kings Wrath, and loss of life.
- 7) He should surrender to teacher and regard him as head.
- 8) He should leave as son, servant and suppliant
- 9) He should move with humbleness without jealousy
- 10) He should think welfare of all the living beings, keeping the Brahmins before.
- 11) He should make effort to provide health to the patients by all means.
- 12) He should not think ill of the patients even at the cost of his life.
- 13) Should not approach the other women and any others property even in imagination
- 14) Dress and accessories should be modest.
- 15) Should not be addicted to drinking, indulging in sins and associated with sinners.

- 16) Should speak smooth, pure, righteous, blissful, thankful, truthful, useful and measured words.
- 17) Should always keep place, time in mind with good remembrance, strive constantly for knowledge, progress and excellence.
- 18) Should never prescribe medicine for those disliked by kings, wicked people etc.
- 19) Should not accept meat offered by the ladies without permission of their husband or guardian
- 20) While entering into the patient's house, should take along a known person whose entry is permitted.
- 21) The matters of the patient's house should not be disclosed outside.
- 22) One should not boast for knowledge, because people get irritated for the excessive boasting even it comes from an authority.



Sections Under Indian Penal Code

Section 82:

Nothing is an offence, which is done by a child under 7 years of age.

Section 83:

Nothing is an offence which is done by a child above 7 years of age, and under 12, who has not attained sufficient maturity of understanding to judge of the nature and consequences of his conduct on that occasion.

Section 96:

Nothing is an offence, which is done in the exercise of the right of private defense.

Section 172:

Whoever absconds in order to avoid being served with a summons or dishonor the summon is liable to be punished with simple imprisonment for a term which may extend one month or with fine upto five hundred rupees or both.

Section 294:

Whoever, to the annoyance of others does any obscene act in any public place, sings, recites or utters any obscene song, words in a public place shall be punished with imprisonment upto 3 months or with fine or with both.

Section 302:

Whoever commits murder shall be punished with death, or imprisonment for life, and shall also be liable to fine.

Section 303:

Whoever, being under sentence of imprisonment for life, commits murder, shall be punished with death.

Section 304:

Whoever, commits culpable homicide, not amounting to murder, shall be punished with imprisonment for life, or imprisonment of either description for a term which may extend to ten years and shall also be liable to fine.

Section 304 B:

Where the death of a women is caused by any burns or bodily injury occurs otherwise than under normal

circumstances within 7 years of her marriage and it is shown that soon before her death she was subjected to cruelty or harassment by her husband or her husband relative is considered under dowry death. Whoever commits dowry death shall be punished with imprisonment for a term which shall not be less than 7 years but which may extend to imprisonment for life.

Section 306:

If any person commits suicide, who ever abets the commission of such suicide shall be punished with imprisonment of either description for a term, which may extend to 10 years and shall also be liable to fine.

Section 314:

Whoever with intent to cause the miscarriage of a woman with child does any act which causes the death of such women shall be punished with imprisonment for a term, which may extend to 10 years and shall also be liable to fine.

Section 318:

Whoever by secretly burying or otherwise disposing of the dead body of a child, whether such child die before

or after or during his birth, intentionally conceals or endeavors to conceal the birth of such child, shall be punished with imprisonment, of either description for a term which may extend to 2 years or with fine or with both.

Section 323:

Whoever, except in the case provided for by voluntarily causes hurt, shall be punished with imprisonment of either description for a term which may extend to 1 year or with fine which may extend to Rs.1000 or with both.

Section 376:

Whoever commits the rape shall be punished with imprisonment of either description for a term, which shall not be less than 7 years may extend upto 10 years and shall also be liable to fine.

Section 376 A:

Whoever has sexual intercourse with his own wife, who is living separately from him under a decree of separation or under any custom or usage without her consent shall be punished with imprisonment of either description for a term, which may extend to 2 years and shall also be liable to fine.

Section 376 B:

Whoever being a public servant, takes advantage of his official position and induces or seduces any women who is in his custody as such public servant or in the custody of a public servant, to have sexual intercourse with him such sexual intercourse not amounting to rape shall be punished with imprisonment of either description for a term which extend to 5 years and shall also be liable to fine.

Section 376 C:

Who ever, being the superintendent or Manager of a Jail, Remand home or other place of custody established takes advantage of his official position and induces or seduces any female inmate to have sexual intercourse not amounting to the offence of rape shall be punished with imprisonment of either description for a term which may extend to 5 years and is liable to fine.

Section 377:

Whoever voluntarily has carnal intercourse against the order of nature with any man, women or animal shall be punished with imprisonment for life or with imprisonment for life or with imprisonment of either

description for a term, which may extend to 10 years and shall also be liable to fine.

Section 379:

Whoever commits theft shall be punished with imprisonment of either description for a term, which may extend to 3 years or with fine or with both.

Section 509:

Whoever intends to insult the modesty of any women, utters any word, makes any sound or gesture, intrudes upon the privacy of such women, exhibits any object shall be punished with simple imprisonment upto 1 year or with fine or with both.



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Whoever being a public servant, takes advantage of his official position and induces or seduces any women who is in his custody as such public servant or in the custody of a public servant, to have sexual intercourse with him such sexual intercourse not amounting to rape shall be punished with imprisonment of either description for a term which extend to 5 years and shall also be liable to fine.

Section 376 C:

Who ever, being the superintendent or Manager of a Jail, Remand home or other place of custody established takes advantage of his official position and induces or seduces any female inmate to have sexual intercourse not amounting to the offence of rape shall be punished with imprisonment of either description for a term which may extend to 5 years and is liable to fine.

Section 377:

Whoever voluntarily has carnal intercourse against the order of nature with any man, women or animal shall be punished with imprisonment for life or with imprisonment for life or with imprisonment of either

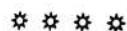
description for a term, which may extend to 10 years and shall also be liable to fine.

Section 379:

Whoever commits theft shall be punished with imprisonment of either description for a term, which may extend to 3 years or with fine or with both.

Section 509:

Whoever intends to insult the modesty of any women, utters any word, makes any sound or gesture, intrudes upon the privacy of such women, exhibits any object shall be punished with simple imprisonment upto 1 year or with fine or with both.

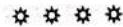


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Rajiv Gandhi University of Health Sciences KARNATAKA
OP Code: 1267
SECOND PROFESSIONAL B.A.M.S. DEGREE EXAMINATION
AGADA TANTRA AND VYAVAHARAYURVEDA - December 2008
[MAX MARKS: 100]
[Time: 3Hours]

Your answers should be specific to the questions asked.
Draw neat labeled diagram wherever necessary.

2 X 11=22 Marks.

1. What are the signs and symptoms of acute food poisoning and discuss the significance of viruddhaahara.
2. Write the types of Drowning, its external/post mortem appearances and medico-legal importance

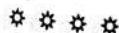
10 X 5 =50 Marks.

- SHORTESSAYS:**
3. Looha damsha lakshanas and treatment
 4. Visha bala [potency of poison]
 5. Symptoms and treatment in sunstroke.
 6. Classification of Burns
 7. Rajimantha sarpa visha lakshana and treatment
 8. Gunja visha lakshana, fatal dose and treatment.
 9. Changes after Death.
 10. Visha Sankata.
 11. Visha Kanya.
 12. Visha Vega and vegantara.

SHORT ANSWERS:

14 X 2=28 Marks.

13. Cadaveric Lividity
14. Cellular death
15. Sexual offences.
16. Gastric Lavage.
17. B.A.L.
18. Abortion.
19. Keela Visha
20. Bhanga Visha
21. Savisha anna lakshana
22. Jangama vishas
23. Khanija Visha
24. Sexual perversions.
25. Asadhyaa Lutha darmsha lakshanas.
26. Visha vridhi kala



Rajiv Gandhi University of Health Sciences KARNATAKA
OP Code: 1267
SECOND PROFESSIONAL B.A.M.S. DEGREE EXAMINATION
AGADA TANTRA AND VYAVAHARAYURVEDA - July - 2008
[Time: 3Hours]

Your answers should be specific to the questions asked.
Draw neat labeled diagram wherever necessary.

LONGESSAY

2 X 11=22 Marks.

1. Define Asphyxia, write the general signs of Asphyxial deaths
2. Define and classify death, and describe in detail the different signs of death.

SHORTESSAYS

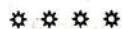
10 X 5 =50 Marks.

3. Routes of administration of poison
4. Bhallataka poisoning
5. Visha Mukta Laxana
6. Visha Utkarshaka Hetu
7. Suicidal and homicidal poisoning
8. Clinical symptoms of acid poisoning and its treatment
9. Upavishas
10. Chaturvimsati upkramas
11. Types of Sarpa Damsha
12. Fatal dose, Fatal period and treatment of Dhatura

SHORT ANSWERS

14 X 2=28 Marks

13. Identification.
14. Electric shock
15. Self inflicted wounds
16. Signs of death due to cold
17. Exumation
18. Professional negligence
19. Kupilu visha
20. Prati visha
21. Luta visha
22. Throttling
23. Alark visha laxana
24. Witness
25. Medicolegal report
26. P.M. Staining



- 1) Define "visha Vega" write their signs and symptoms. What is the importance of visha Vega according to Agada Tantra?
 - 2) Write in detail "medical evidence" how to record the evidence in the court – explain?

SHORTESSAYS

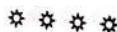
- SHORT NOTES**

 - 3) Signs of poison mixed food
 - 4) Pusha vishaktata (animal poisoning)
 - 5) Sthavara visha
 - 6) Alariki visha
 - 7) Virechana
 - 8) Dactylography
 - 9) Brain stem death
 - 10) Privileges and rights of the patients
 - 11) Conditions affecting the rate of putrefaction
 - 12) Forensic ballistics

SHORT ANSWERS

14 X 2=28 Marks.

- 13) Visha kala
 - 14) Visha sampapti
 - 15) Gara visha
 - 16) Sarpanghabhihata
 - 17) Muskha visha
 - 18) Mitasarjaneevana
 - 19) Tandra
 - 20) Legal sentences
 - 21) Medical negligence
 - 22) Early signs of death
 - 23) Bansdola
 - 24) Identification
 - 25) Scalds
 - 26) Signs of pregnancy



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Rajiv Gandhi University of Health Sciences KARNATAKA QP Code: 1267
SECOND PROFESSIONAL B.A.M.S. DEGREE EXAMINATION
AGADA TANTRA AND VYAVAHARAYURVEDA -December 2008
[Time: 3Hours] [MAX MARKS: 100]

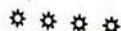
Your answers should be specific to the questions asked.
Draw neat labeled diagram wherever necessary.

- LONGESSAY:** 2 X 11=22 Marks.
- What are the signs and symptoms of acute food poisoning and discuss the significance of viruddhaahara.
 - Write the types of Drowning, its external post mortem appearances and medico-legal importance

- SHORTESSAYS:** 10 X 5 =50 Marks.
- Lootha damsha lakshana and treatment
 - Visha bala [potency of poison]
 - Symptoms and treatment in sunstroke.
 - Classification of Burns
 - Rajimantha sarpa visha lakshana and treatment
 - Gunja visha lakshana, fatal dose and treatment.
 - Changes after Death.
 - Visha Sankata.
 - Visha Kanya.
 - Visha Vega and vegantara.

- SHORT ANSWERS:** 14 X 2=28 Marks.

- Cadaveric Lividity
- Cellular death
- Sexual offences.
- Gastric Lavage.
- B.A.L
- Abortion.
- Keeta Visha
- Bhangra Visha
- Savisha anna lakshana
- Jangama vishas
- Khanija Visha
- Sexual perversions.
- Asadiya Lutha damsa lakshanas.
- Visha vridhi kala



Rajiv Gandhi University of Health Sciences KARNATAKA QP Code: 1267
SECOND PROFESSIONAL B.A.M.S. DEGREE EXAMINATION
AGADA TANTRA AND VYAVAHARAYURVEDA -July - 2008
[Time: 3Hours] [MAX MARKS: 100]

Your answers should be specific to the questions asked.
Draw neat labeled diagram wherever necessary.

LONGESSAY

1. Define Asphyxia, write the general signs of Asphyxial deaths
2. Define and classify death, and describe in detail the different signs of death.

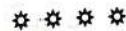
SHORTESSAYS

3. Routes of administration of poison
4. Bhallatka poisoning
5. Visha Mukta Laxana
6. Visha Utkarshaka Hetu
7. Suicidal and homicidal poisoning
8. Clinical symptoms of acid poisoning and its treatment
9. Upavishas
10. Chaturvimsati upkramas
11. Types of Sarpa Damsha
12. Fatal dose, Fatal period and treatment of Dhattura

SHORT ANSWERS

14 X 2=28 Marks

- Identification.
- Electric shock
- Self inflicted wounds
- Signs of death due to cold
- Exumation
- Professional negligence
- Kupili visha
- Prati visha
- Luta visha
- Throttling
- Alark visha laxana
- Witness
- Medicolegal report
- P.M. Staining



Rajiv Gandhi University of Health Sciences KARNATAKA
QP Code: 1267
SECOND PROFESSIONAL B.A.M.S. DEGREE EXAMINATION
AGADA TANTRA AND VYAVAHARAYURVEDA – January 2008
[MAX MARKS: 100]
[Time: 3Hours]
 Your answers should be specific to the questions asked.
 Draw neat labeled diagram wherever necessary.
2 X 11=22 Marks.

LONGESSAY

- 1) Define "visha Vega" write their signs and symptoms. What is the importance of visha Vega according to Agada Tantra?
- 2) Write in detail "medical evidence" how to record the evidence in the court – explain?

10 X 5 =50 Marks.

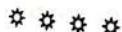
SHORTESSAYS

- 3) Signs of poison mixed food
- 4) Pasu vishaktata (animal poisoning)
- 5) Sthavara visha
- 6) Alarka visha
- 7) Virechana
- 8) Dactylography
- 9) Brain stem death
- 10) Privileges and rights of the patients
- 11) Conditions affecting the rate of putrefaction
- 12) Forensic ballistics

SHORT ANSWERS

14 X 2=28 Marks.

- 13) Visha kala
- 14) Visha samprapti
- 15) Gara visha
- 16) Sarvangabhihata
- 17) Muskhaka visha
- 18) Mritisarjeevana
- 19) Tandra
- 20) Legal sentences
- 21) Medical negligence
- 22) Early signs of death
- 23) Bansdola
- 24) Identification
- 25) Scalds
- 26) Signs of pregnancy



Rajiv Gandhi University of Health Sciences KARNATAKA
QP Code: 1267
SECOND PROFESSIONAL B.A.M.S. DEGREE EXAMINATION
AGADA TANTRA AND VYAVAHARAYURVEDA – February 2007
[MAX MARKS: 100]
 Your answers should be specific to the questions asked.
 Draw neat labeled diagram wherever necessary.

LONGESSAY

1. Classify Upavisha and Write poisonous signs and symptoms, Fatal dose, fatal period and management of Kupeelu.
2. How to establish Identification in the case of Unknown body.

SHORTESSAYS

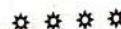
10 X 5 =50 Marks.

3. Madatyaya.
4. Mandali Sarpa toxic signs and symptoms.
5. Mercury poisonous symptoms and its management
6. Dooshi visha
7. Vrischika visha
8. Autopsy external examination
9. Documentary evidence
10. Coma-causes, post mortem appearances
11. Post mortem Lividity
12. Hydrostatic test

SHORT ANSWERS

14 X 2=28 Marks.

13. Gara visha
14. Visha kanya
15. Visha sankata
16. Universal Antidote
17. Arista bandana
18. General treatment of Poisoning
19. Jangama visha adhisthana
20. Conduct Money
21. Justifiable abortion
22. Cadaveric spasm
23. Medico-legal importance of Insanity.
24. Abrasions.
25. Professional secrecy
26. Medical Negligence.



Rajiv Gandhi University of Health Sciences KARNATAKA
QP Code: 1267
SECOND PROFESSIONAL B.A.M.S. DEGREE EXAMINATION
AGADA TANTRA AND VYAVAHARAYURVEDA - AUGUST 2006
[MAX MARKS: 100]
[Time: 3 Hours]

Your answers should be specific to the questions asked.

Draw neat labeled diagram wherever necessary.

LONGESSAY 2 X 11=22 Marks.

- What is Vishavega? Describe the vega lakshanans and chikitsa of darveekara sarpa
- Define identification. Describe the medico legal importance of identification, both in living and dead persons.

SHORTESSAYS

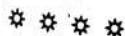
10 X 5 =50 Marks.

- Write the visha mukta lakshanans
- Give the characteristics of punctured wounds
- What is Adipocere formation? Write the medico legal importance
- Write the combination of chandrodaya Agada
- Give the characteristics of fire arm wound
- Enlist the causes of sterility in females
- Define MTP. What are the indications?
- Write the asadhyha lakshanans of sarpa damsya
- Give classical reasons for visha vriddhi and visha kshaya
- Describe shock and its pathophysiology

SHORT ANSWERS

14 X 2=28 Marks.

- Define Syncope
- Describe the colour changes in putrefaction
- What is Professional negligence
- Define Dry drowning
- Describe the samanya lakshanans of Lutha visha
- Define visha sankata
- Define criminal abortion
- Describe the guna of visha and ojus
- Describe police inquest
- Enlist the aims of medico legal autopsy
- Describe the pugilistic attitude
- Give a classical combination of Maha Agada
- What are the inferences, if there is no exit wound in a firearm injury?
- Give purification method of Bhallataka



Rajiv Gandhi University of Health Sciences KARNATAKA
QP Code: 1267
SECOND PROFESSIONAL B.A.M.S. DEGREE EXAMINATION
AGADA TANTRA AND VYAVAHARAYURVEDA - MARCH 2006
[MAX MARKS: 100]
[Time: 3 Hours]

Your answers should be specific to the questions asked.

Draw neat labeled diagram wherever necessary.

LONGESSAY

2 X 11=22 Marks.

- Enlist the Vishopakramas described by Caraka. Describe any two of them in detail
- Enumerate the post mortem signs in a case of death by strangulation.

SHORTESSAYS

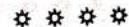
10 X 5 =50 Marks.

- What is cadaveric spasm. Describe its medico legal importance
- How will you do gastric lavage?
- Describe dooshi visha and discuss its role in present scenario.
- What are the indications for justifiable abortions
- What is universal antidote? How does each ingredient work?
- What are the treatment measures to be adopted in the 3rd and 5th visha Vegas of mandali sarpa?
- Give details of asadhyha lakshanans of mooshika visha.
- Enlist the signs and symptoms of chronic arsenic poisoning.
- What are dangerous Injuries?
- Describe the management of gara visha.

SHORT ANSWERS

14 X 2=28 Marks.

- Who is an expert witness? Give examples
- What is Rigor mortis?
- Define kidnapping.
- Describe Hridayavararam
- Describe the asadhyha lakshanans of lutha visha
- What is avapeeda nasya?
- Give the classical purification method of Kupeelu
- Define anthropometry.
- What are the adhishtanas of jangama visha?
- How the term 'Lutha' has been derived?
- Describe the 'Sarapumkha prayoga' of Sushruta in alarka visha
- What is 'Transvestism'?
- What is 'Hess formula'
- Define mummification



Rajiv Gandhi University of Health Sciences KARNATAKA
QP Code: 1267
SECOND PROFESSIONAL B.A.M.S. DEGREE EXAMINATION
AGADA TANTRA AND VYAVAHARAYURVEDA - AUGUST 2005
[MAX MARKS: 100]
[Time: 3 Hours]
Your answers should be specific to the questions asked.
Draw neat labeled diagram wherever necessary.

LONGESSAY

- 2 X 11=22 Marks.
1. Describe general introduction, fatal dose, fatal time, symptoms, treatment, post mortem appearance of Karaveera poisoning
2. Describe drowning in detail.

SHORTESSAYS

10 X 5 =50 Marks.

3. Write the symptoms and the treatment of Mandali snake
4. Lacerated wound
5. Symptoms of pregnancy
6. Post mortem staining
7. Define Gara visha and its treatment
8. Symptoms of Kuchala poisoning
9. Distinguish between hanging and strangulation
10. Changes observed in muscles after death
11. Distinguish between burns and scalds
12. Types of witness.

SHORTANSWERS

13. Sthavara Visha adhisthanas
14. Types of courts
15. Madatyaya
16. Medico legal importance of age
17. Hridayavarana
18. Upavisha
19. Fatal dose, fatal period of Naga (Lead)
20. Signs of visha data
21. Visha kanya
22. Types of snake bite
23. Dhātura visha lakshanas
24. Ahiphena visha lakshanas
25. Amla visha chikitsa
26. Dooshti visha

14 X 2=28 Marks.



Rajiv Gandhi University of Health Sciences KARNATAKA
QP Code: 1267
SECOND PROFESSIONAL B.A.M.S. DEGREE EXAMINATION
AGADA TANTRA AND VYAVAHARAYURVEDA -MARCH 2005
[MAX MARKS: 100]
[Time: 3 Hours]

Your answers should be specific to the questions asked.
Draw neat labeled diagram wherever necessary.

LONGESSAY

- 2 X 11=22 Marks.
1. What are Vishagunani? How they are opposite to Ojas?
Explain Pranaharana Parinama of Visha
2. Define Rape. Explain how you systematically examine a case of rape.

SHORTESSAYS

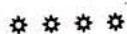
10 X 5 =50 Marks.

3. Afem
4. Mooshika visha
5. Gara visha
6. Upavisha
7. Visha Vega
8. Post mortem Lividity
9. Visha sankata
10. Visha kanya
11. Jayapala
12. Lutha visha.

SHORTANSWERS

14 X 2=28 Marks.

13. Mrutyu kala nirnaya
14. Karaveera
15. Dharma
16. Adharma visha yoni
17. Somalia
18. Garbhapatra
19. Mrutyu chihna
20. Bhallatka
21. Vishokta anna parksha
22. Vrana
23. Fatal dose
24. Agada
25. Gunja
26. Upakramas



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QP Code: RC - 1267
SECOND PROFESSIONAL B.A.M.S. DEGREE EXAMINATION
AGADA TANTRA AND VYAVAHARAYURVEDA – 2004.
[Time: 3 Hours] [MAX MARKS: 100]

Your answers should be specific to the questions asked.
Draw neat labeled diagram wherever necessary.

2 X 11=22 Marks

LONGESSAY

1. Define Asphyxia. Describe the causes of Asphyxia and also describe in detail "hanging".
2. Name the general principles of the treatment of poisoning. Describe in detail the methods of stomach wash.

SHORT ESSAYS

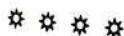
3. Dying deposition.
4. Duties of doctor.
5. Poisonous food examination.
6. Burn.
7. Visha classification.
8. Symptoms of Kuchala poisoning and its post mortem symptoms.
9. Infanticide.
10. Male and female pelvis.
11. Visha guna, Visha yoni.
12. General treatment of visha

10 X 5 =50 Marks.

SHORT ANSWERS

13. Visha Vega and Visha vegantara
14. Stomach wash tube
15. Objects of post mortem examination
16. Symptoms of scorpion poisoning
17. Ground on which pregnancy can be legally terminated (M.T.P.)
18. Signs of death
19. Treatment of Darvika snake poisoning
20. Madhya and Madatyaya.
21. General symptoms of Jangama visha
22. Difference between nux vomica poisoning and tetanus
23. Rape
24. Write the fatal dose and fatal period of 'Bhang'
25. Sulphuric acid
26. Post mortem muscular change.

14 X 2=28 Marks.



Rajiv Gandhi University of Health Sciences KARNATAKA
QP Code: RC - 2483
SECOND PROFESSIONAL B.A.M.S. DEGREE EXAMINATION
AGADA TANTRA AND VYAVAHARAYURVEDA MARCH –2003
[Time: 3 Hours] [MAX MARKS: 100]

Your answers should be specific to the questions asked.
Draw neat labeled diagram wherever necessary.

2 X 11=22 Marks

LONGESSAY

1. Describe Visha utpatti, and its Vargeekarana and write adhishtanas of Visha
2. Write the circumstances of identifying a person. How do you identify the sex in a living person?

SHORT ESSAYS [Any Ten]

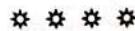
3. Gara Visha
4. Visha guna
5. Alarka visha
6. Gunja
7. Vatsanabhi
8. Snushi
9. Death certificate
10. Fatal period
11. Kupeelu
12. Visha sankata.
13. Dooshi visha
14. Mrutyu prakara
15. Viyoni maithuna
16. Visha mukta lakshanas

10 X 5 =50 Marks.

SHORT ANSWERS

17. Rape
18. Karaveera
19. Dharma
20. Adharma Visha yoni
21. Visha Vega
22. Garbha pata
23. Mrutyu chinah
24. Bhallataka
25. Vishokta anna pariksha
26. Vrana
27. Fatal dose
28. Agada
29. Somala
30. Upakramas

14 X 2=28 Marks.

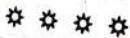


Rajiv Gandhi University of Health Sciences KARNATAKA
QP Code: RC - 2812
SECOND PROFESSIONAL B.A.M.S. DEGREE EXAMINATION
AGADA TANTRA AND VYAVAHARAYURVEDA NOVEMBER 2003
[Time: 3 Hours] [MAX MARKS: 100]
Your answers should be specific to the questions asked.
Draw neat labeled diagram wherever necessary.

LONGESSAY 2 X 11=22 Marks
27. Define death, explain how do you confirm death and conduct postmortem examination?
28. Define Rape. Explain how do you systematically examine a case of rape?

SHORT ESSAYS [Any Ten] 10 X 5 =50 Marks.
3) Visha Vega
4) Visha guna
5) Bhang
6) Savisha Anna pariksha
7) Vishotkarshahetu
8) Alarka visha lakshana
9) Dattura
10) Visha yoni
11) Gunja
12) Hartala
13) Fatal dose
14) Dushi visha
15) Vyakti parichaya
16) Viadykeeya pramana patra

SHORT ANSWERS 14 X 2=28 Marks.
17) Mrutyu prakara
18) Arka
19) Visha mukta lakshanai
20) Garbha pata
21) Dying declaration
22) Agada
23) Jala nimaajjana
24) Utbandhanan
25) Kupeelu
26) Jangama visha adhisthana
27) Virgin
28) Sudden Death
29) Karvera
30) Visha sankata



Rajiv Gandhi University of Health Sciences KARNATAKA
QP Code: SC-1845
SECOND PROFESSIONAL B.A.M.S. DEGREE EXAMINATION
AGADA TANTRA AND VYAVAHARAYURVEDA - 2002
[Time: 3 Hours] [MAX MARKS: 100]

Your answers should be specific to the questions asked.
Draw neat labeled diagram wherever necessary.

2 X 11=22 Marks

LONGESSAY
1. What are Vishagunani? How they are opposite to Oja? Explain the Pranaharana Parinam of Visha
2. What are the signs of death? Write three of them in detail.

10 X 5 =50 Marks.

SHORT ESSAYS [Any Ten]

3. Madatyaya
4. Lutha Damsha Lakshanani
5. Sthavara Visha vikara
6. Dushta Jala
7. Gara Visha
8. Starvation death
9. Sudden death
10. Medico legal importance of wounds
11. Visha prabhava
12. Visha Pita Lakshanani.
13. Jangama Visha Lakshanani
14. Witness

SHORT ANSWERS

15. Ahiphena
16. Vishatinduka
17. Somalia
18. Acid
19. Vishamukta
20. Jalasantra
21. Vishotkarsha hetu
22. Mula visha
23. Kayika papani
24. Causes of male impotency
25. Dying declaration
26. Hanging
27. Teeth
28. Identification

14 X 2=28 Marks.



Rajiv Gandhi University of Health Sciences KARNATAKA
QP Code: RC-2148
SECOND PROFESSIONAL B.A.M.S. DEGREE EXAMINATION
AGADA TANTRA AND VYAVAHARAYURVEDA -2002
[Time: 3 Hours] [MAX MARKS: 100]

Your answers should be specific to the questions asked.
Draw neat labeled diagram wherever necessary.

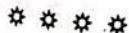
- LONGESSAY** 2 X 11=22 Marks
1. Describe Sarpa Visha Prakara and write Lakshana and Chikitsa of Darveekara and Rajeevamtha Sarpa damsha
2. Define wound. Enumerate its types. Describe gun shot wounds in detail.

SHORT ESSAYS [Any Ten] 10 X 5 =50 Marks.

3. Upa visha
4. Visha Vega
5. Gara visha
6. Afeem
7. Mushika visha
8. Dooshi visha
9. Visha sankata
10. Visha kanya
11. Jaya pala
12. Lutha visha.
13. Bhruna hatala
14. Agada
15. Post mortem Lividity
16. Sudden death.

SHORT ANSWERS 14 X 2=28 Marks.

17. Arka
18. Abhighata bheda
19. Sthavara visha adhisthana
20. Agada Tantra nirukti
21. Visha guna
22. Mrutyu Kala nimaya
23. Kupeelu
24. Vidhyut Dhah
25. Gunja
26. Sarpanga Abhihata
27. Karaveera
28. Mrutyu Sankocha
29. Jala Nimajjana
30. Udbhandana



Rajiv Gandhi University of Health Sciences KARNATAKA
QP Code: SC-1563
SECOND PROFESSIONAL B.A.M.S. DEGREE EXAMINATION
AGADA TANTRA AND VYAVAHARAYURVEDA - 2001
[Time: 3 Hours] [MAX MARKS: 100]

Your answers should be specific to the questions asked.
Draw neat labeled diagram wherever necessary.

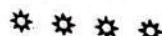
- LONGESSAY** 2 X 11=22 Marks
1. Dushi visha vyakhya, lakshanani, kala, upadrava,
sadhyasadyatwam and chikitsa
2. Determination of age and its medico legal importance. Explain
in detail.

SHORT ESSAYS (Any Ten) 10 X 5 =50 Marks.

3. Vishasya Ojo viparitawama.
4. Maraka kala
5. Vishakanya
6. Sthavara visha lakshanani
7. Garavisha
8. Ashwamara
9. Kupeelu
10. Rigor mortis
11. Gunja
12. Vishamukta lakshana
13. Gala udbandana
14. Oath.

SHORT ANSWERS 14 X 2=28 Marks.

15. Bhallataka
16. Dhatura
17. Ahiphena
18. Agada
19. Kayika papa
20. Nyayalaya
21. Mrutyu
22. Hanging
23. Bones
24. Kanda visha
25. Antidote
26. Raktamokshanam
27. Sodomy
28. Legal abortion



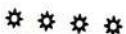
Rajiv Gandhi University of Health Sciences KARNATAKA
QP Code: SC-1563
SECOND PROFESSIONAL B.A.M.S. DEGREE EXAMINATION
AGADA TANTRA AND VYAVAHARAYURVEDA – 2001
[Time: 3 Hours] [MAX MARKS: 100]

Your answers should be specific to the questions asked.
Draw neat labeled diagram wherever necessary.

- LONGESSAY** 2 X 11=22 Marks
1) Agada tantrasaya nirukti paribhasa, itihasa and write its importance Astanga Ayurveda.
2) Sthavara vishasaya- nirukti, adhisthanam, Vega, visha lakshanani, chikitsa cha likhata.

- SHORT ESSAYS (Any Ten)** 10 X 5 =50 Marks.
3) Alaraka visha chikitsa
4) Vishakanya
5) Chikitsopa krama
6) Bhrunahatya
7) Napunsakata
8) Mrutyu chinnani
9) Sakshi
10) Kupeelu
11) Arka
12) Visha sankatata
13) Sex
14) Savisha Anna pariksha

- SHORT ANSWERS** 14 X 2=28 Marks.
15) Dying declaration
16) Mrutyu prakara
17) Vagina
18) Karaveera
19) Fatal dose
20) Visha gunani
21) Jangama visha adhisthani
22) Kayika papani
23) Visha mukha lakshana
24) Vishotkarsha hetu
25) Mula visha
26) Galaud Bhandhana
27) Medical Certificate
28) Death certificate



Rajiv Gandhi University of Health Sciences KARNATAKA
QP Code: SC-1563
SECOND PROFESSIONAL B.A.M.S. DEGREE EXAMINATION
AGADA TANTRA AND VYAVAHARAYURVEDA – 2000.
[MAX MARKS: 100]

Your answers should be specific to the questions asked.
Draw neat labeled diagram wherever necessary.

- LONGESSAY** 2 X 11=22 Marks
1. Describe Darvikara Sarpa damsna lakshanas and Veganusara chikitsa
2. Describe three types of death with their medico legal importance. 10 X 5 =50 Marks.
SHORT ESSAYS (Any Ten)
3. Visha paribhasa, Upatti and Vargikarana
4. Sthavara and Jangama Vishadhishtanas
5. Chatur Vimshati Vishopakramas
6. What are the features of ideal suicidal and homicidal poison? What are the routes of administration of poison?
7. Mention the fatal dose, fatal period, and signs and symptoms of poisoning by Langali. What is its medico legal importance?
8. Mention the Sarpa Vargikarana. Describe the Visha Vega
9. What are the reasons for Alpavishata of Sarpa?
10. Narrate the difference in poisoning caused by Gandhakamla, H_2SO_4 and HCL.
11. Mention Vishaguna karma and its difference with Ojus.
12. State Vishasya Pranahara Nirukti.
13. What are the causes of death in hanging?
14. What are the symptoms produced by electric shock? Write the post mortem appearance.
15. Describe the features of lead poisoning.
16. Explain post mortem staining.

- SHORT ANSWERS** 14 X 2=28 Marks.
17. Vishakanya.
18. Mercurial tremors.
19. Vitriol throwing.
20. General signs and symptoms of chronic poisoning
21. Medico legal importance of Gunja poisoning
22. Amasya- Pakwasaya Gatha visha Lakshanas
23. Sankavisha
24. Medical termination of pregnancy
25. Sudden death
26. Dasanga Agada
27. Food poisoning
28. Drowning
29. Rigor mortis
30. Doosheevishari Gulika

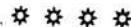
Rajiv Gandhi University of Health Sciences KARNATAKA
QP Code: SC-0844
SECOND PROFESSIONAL B.A.M.S. DEGREE EXAMINATION
AGADA TANTRA AND VYAVAHARAYURVEDA - 2000.
[Time: 3 Hours] [MAX MARKS: 100]

Your answers should be specific to the questions asked.
Draw neat labeled diagram wherever necessary.

- LONGESSAY** 2 X 11=22 Marks
1. Describe the classification of snakes. Write the Vegas and treatments in mandali visha
 2. Describe various types of wounds and their medico legal importance;
- SHORT ESSAYS (Any Ten)** 10 X 5 =50 Marks.
3. Describe the visha peetha lakshan as according to Sushruta
 4. Define dooshivisha.
 5. What are the causes of death in hanging?
 6. Describe the various cadaveric changes in muscular tissues.
 7. What are the symptoms produced by vatsanabh visha?
 8. Write down the visha mukta lakshan as.
 9. Describe the complications of vishayukta nasya karma.
 10. Describe the common symptoms of Vrischika dams a and its treatment.
 11. Difference between ideal suicidal and ideal homicidal poisoning.
 12. What are the symptoms produced by electric shocks? Write the post mortem appearance?
 13. Post mortem staining.
 14. Describe any two of cerebral poisons.

Write Short Notes:

15. Visha sankatam
16. Pakwasayagata visha lakshan as
17. Dactylography
18. Mruthyuthara sankocha
19. Difference between Savisha dams a and Nirvisha dams a
20. Jala santrasam
21. Adipocere
22. Raktamoksha in visha chikitsa
23. Lutha visha samanya chikitsa
24. Sulphuric acid poisoning
25. Strangulation
26. Medcial termination of pregnancy
27. Jangama visha adhishtan as
28. Sudden death



Rajeev Gandhi University of Health Sciences KARNATAKA
QP Code: SC-0503
SECOND PROFESSIONAL B.A.M.S. DEGREE EXAMINATION
AGADA TANTRA AND VYAVAHARAYURVEDA - 1999.
[Time: 3 Hours] [MAX MARKS: 100]

Your answers should be specific to the questions asked.
Draw neat labeled diagram wherever necessary.

- LONGESSAY** 2 X 11=22 Marks
1. Describe the three types of deaths with their medico legal importance
 2. Describe Darvikara Sarpa dams a lakshan as and the treatments according to Vegas.
- SHORT ESSAYS (Any Ten)** 10 X 5 =50 Marks.
3. What are the reasons of Alapavishatha of snakes?
 4. Mention the difference in properties of Ojas and Visha.
 5. Describe Gara visha and its complications.
 6. Write down the asadhy a lakshan as of Sarpa dams a.
 7. Describe the common features of 'Arsenic poisoning'
 8. Describe the difference between wounds inflicted during life and after.
 9. Explain post mortem staining.
 10. Write down the difference between Burns and Scalds.
 11. Describe various types of Sarpa dams a prakara according to Vagabhatta.
 12. Describe the features of Lead poisoning.
 13. What are the post mortem features of a death due to starvation?
 14. Mention the fatal dose, fatal period and signs, symptoms of poisoning by Langali.

SHORT ANSWERS

14 X 2=28 Marks.

15. Virgin.
16. Amasayagatha Visha Lakshan as.
17. Rigor mortis.
18. Sankha visha.
19. Sudden death
20. Lutha visha samanya chikitsa.
21. Jala santrasam.
22. Medical termination of pregnancy.
23. Anthropometry.
24. Hridayavararam.
25. Food poisoning.
26. Bruises.
27. Vrischika visha samanya lakshan as.
28. Drowning.



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